

SHARP 14VT10X1 SERVICE MANUAL



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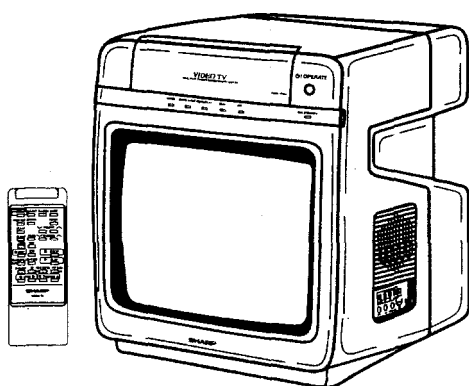
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SHARP SERVICE MANUAL

S81G314VT10X1

VHS VIDEO TV



MODEL 14VT10X1

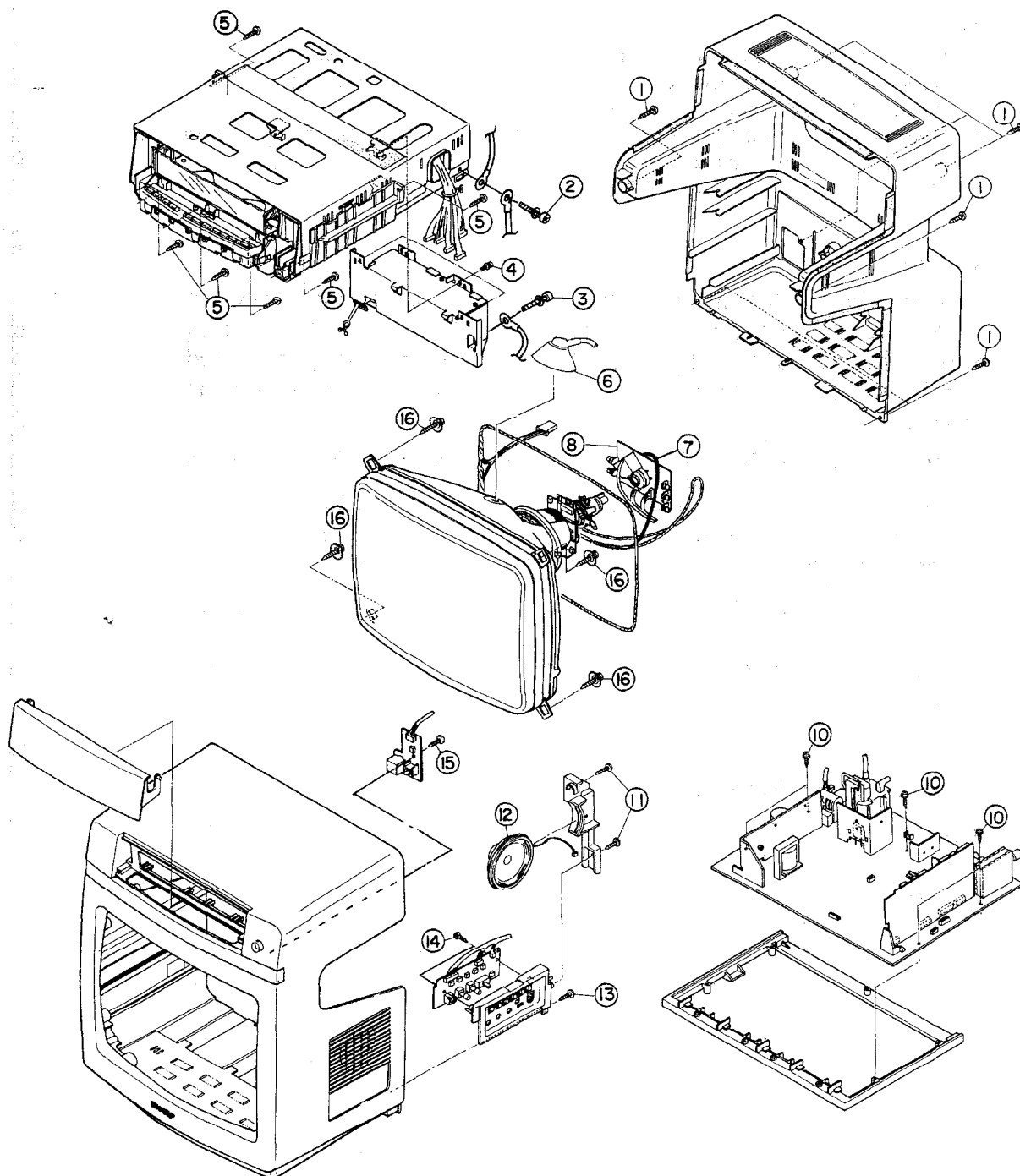
In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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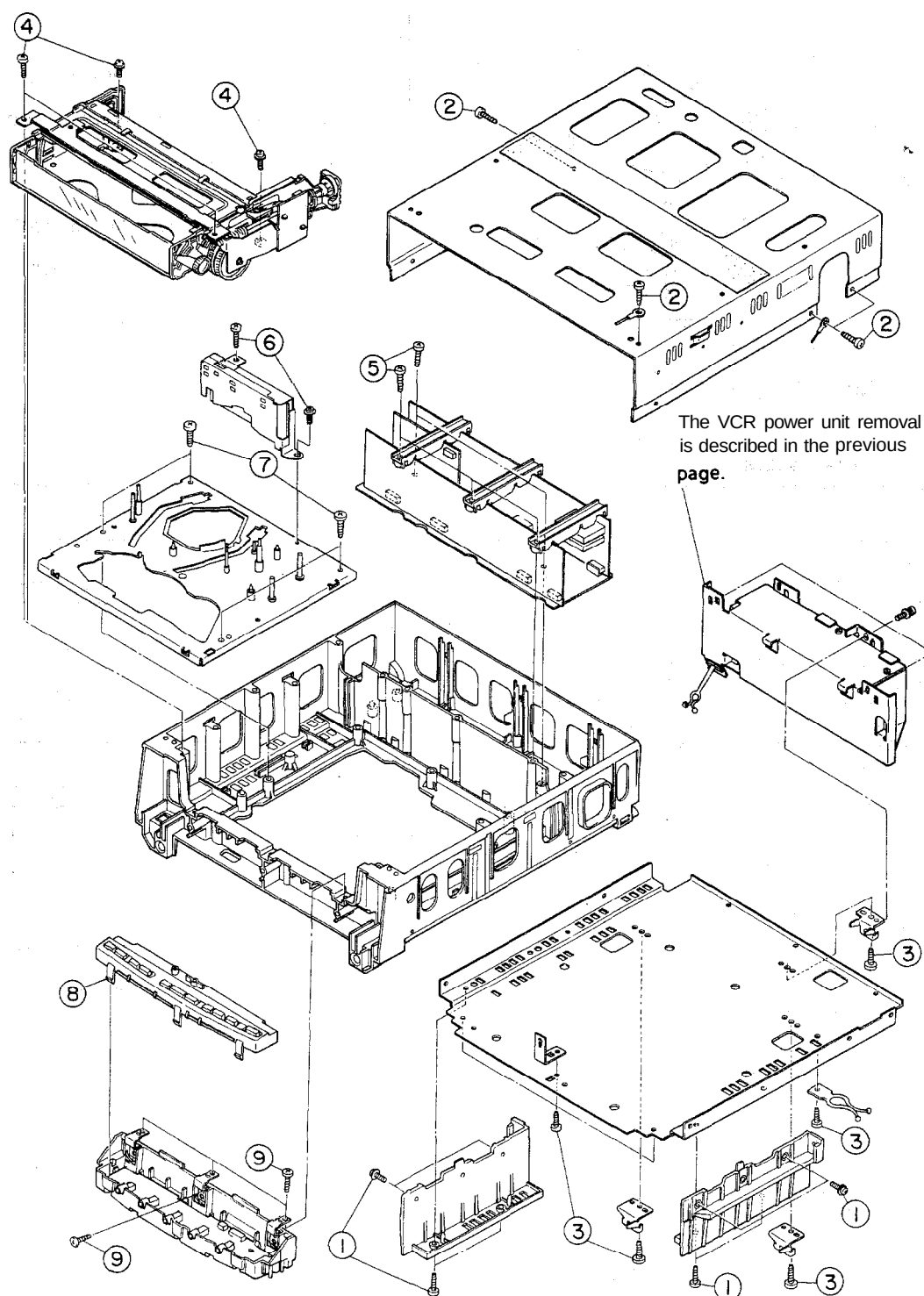
DISASSEMBLY AND REASSEMBLY

1. Remove the seven back cabinet fastening screws ①.
2. Remove the one wire fastening screw ②.
3. Remove the one wire fastening screw ③.
4. Remove the three VCR's power unit fastening screws ④.
5. Remove the six VCR fastening screws ⑤ and remove the VCR with the VCR's operation.
6. Remove the CRT's second anode cap ⑥ from the CRT.
7. Remove the "L2" lead wire ⑦ from the CRT socket unit ⑧.
8. Remove the CRT socket unit ⑧.
9. Remove the TV mother unit with the frame from the front cabinet.
10. Remove the five TV mother unit fastening screws ⑩ from the frame.
11. Remove the two speaker holder fastening screws ⑪ and remove the holder.
12. Remove the speaker ⑫.
13. Remove the control unit fastening screw ⑬ and remove the control unit from the front cabinet.
14. Remove the two control unit fastening screws ⑭.
15. Remove the one control unit fastening screw ⑮.
16. Remove the four CRT fastening screws ⑯.

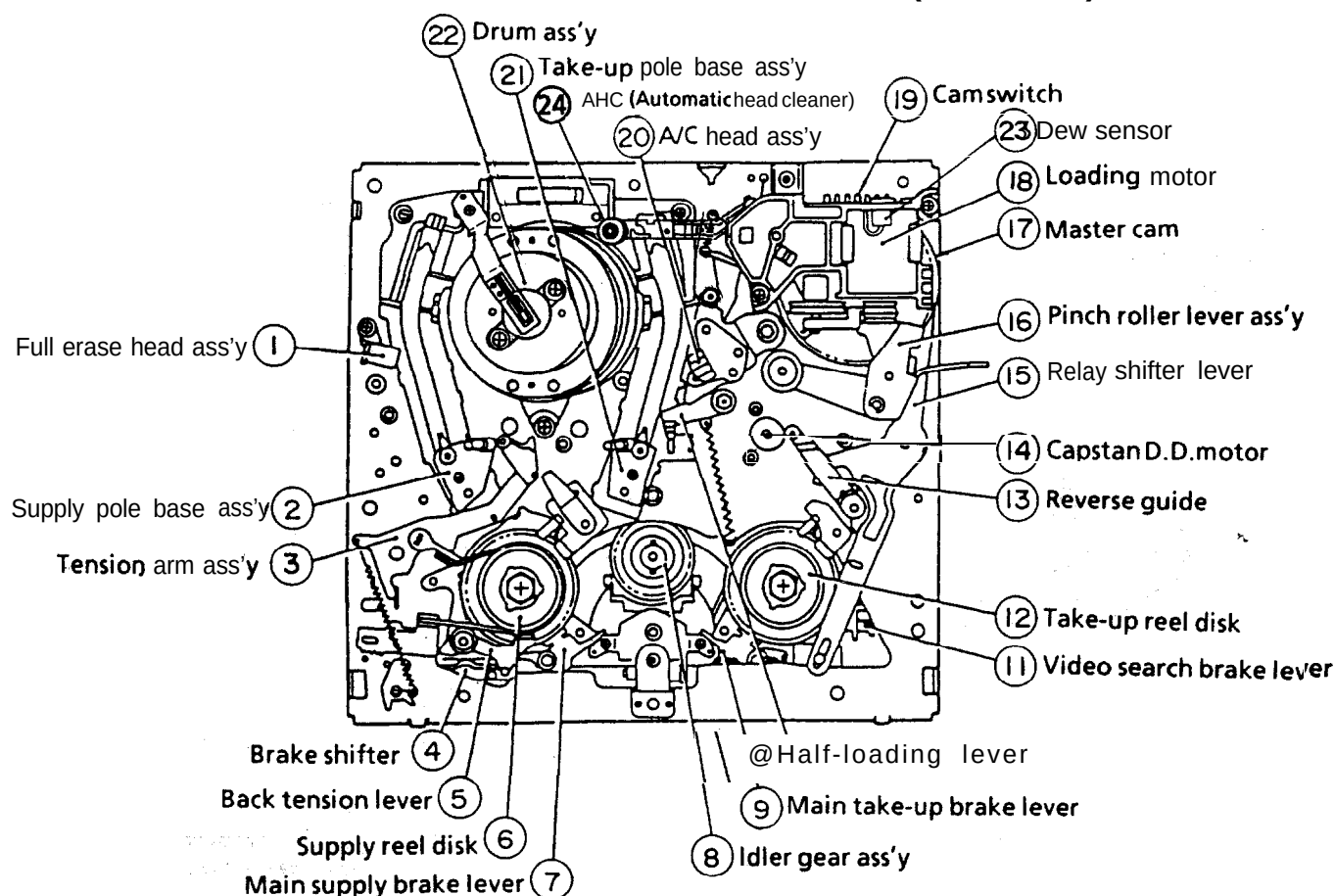


DISASSEMBLY AND REASSEMBLY OF THE VCR SECTION

1. Remove the eight VCR holder fastening screws ①.
2. Remove the four upper cabinet fastening screws ②.
3. Remove the seven bottom plate fastening screws ③.
4. Remove the four cassette housing fastening screws ④.
5. Remove the five main PWB fastening screws ⑤.
6. Remove the two head amp fastening screws ⑥.
7. Remove the four mechanism chassis fastening screws ⑦.
8. Release the seven operation panel fastening clips ⑧ and remove the operation upper panel.
9. Remove the six operation holder fastening screws ⑨.

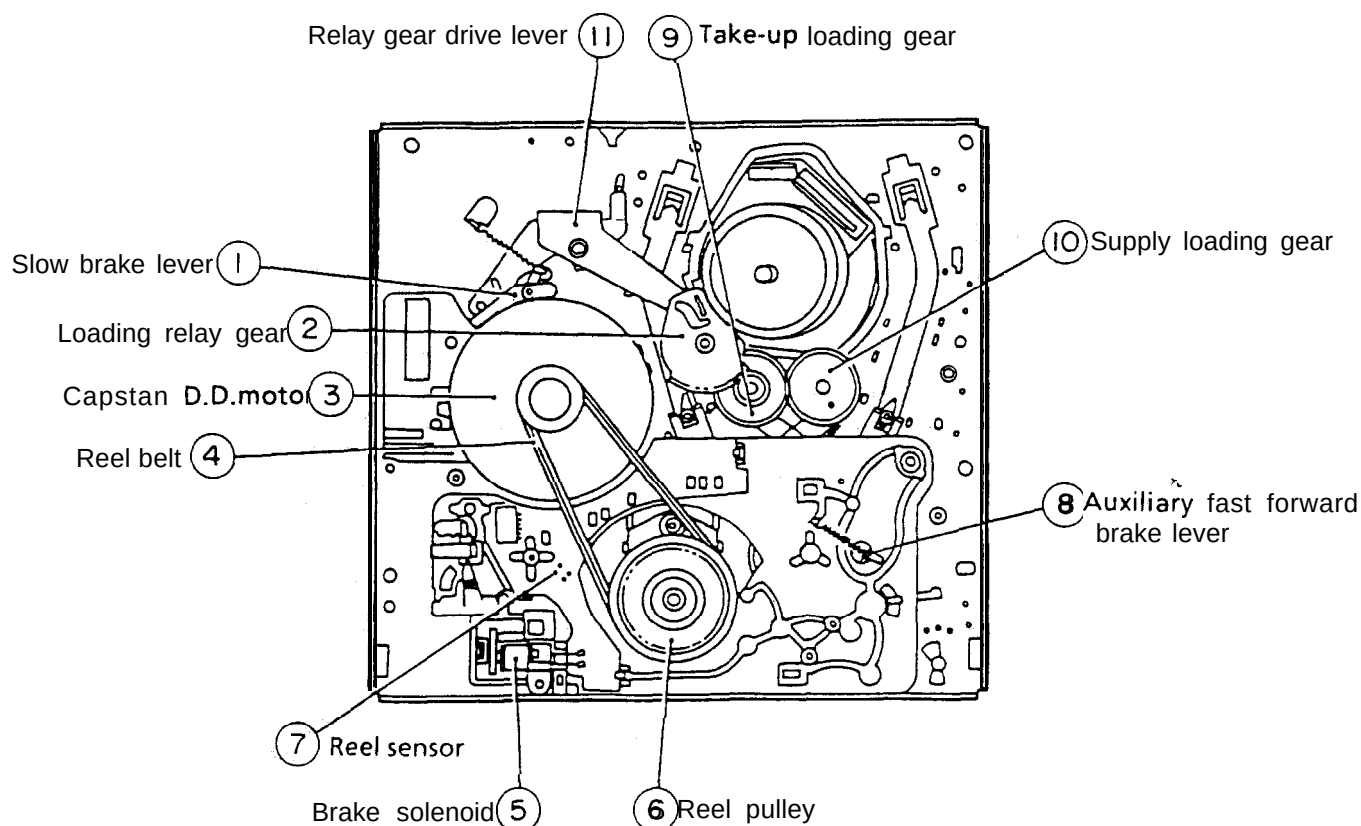


FUNCTION OF MAJOR MECHANICAL PARTS (TOP VIEW)



No.	Function	No.	Function
1.	Full erase head ass'y Erase the whole records on the tape in the recording mode.	13.	Reverse guide Pulls out the tape in the video search rewind mode, and controls the tape drive train height with the upper and lower guides.
3.	Tension arm ass'y Detects the tension of tape while running, and brakes the supply reel disk via the tension band.	15.	Relay shifter lever Transmits the operation of the master cam to the brake shifter, and operates the reverse guide.
4.	Brake shifter Set the position of brake or the like in accordance with the modes such as stop and playback.	16.	Pinch roller lever ass'y Press-fits the tape to the capstan during tape running. The right protrusion switches the clutch of the cassette housing control assembly in "tape eject", and makes the mechanism eject the tape.
5.	Back tension lever Bakes the supply reel disk to a certain degree to prevent tape slackening during "half-loading", "loading" and "shifting from playback to video search rewind".	17.	Master cam Turns clockwise during loading, and counterclockwise during unloading, and moves the shifter or the like in accordance with each mode.
7.	Main supply brake lever Brakes the supply reel disk to prevent tape slackening when the unit is stopped in fast forward or rewind mode.	18.	Loading motor A motive power which drives the mechanism. It transmits the power to the master cam and cassette housing control assembly via the belt.
9.	Main take-up brake lever Brakes the take-up reel disk to prevent tape slackening when the unit is stopped in fast forward or rewind mode.	19.	Cam switch Rotates synchronously with the master cam, and detects the position of each mode by means of the internal switch
10.	Half-loading lever Bring the tape in contact with the A/C head, putting it in half-loading state in the fast forward or rewind mode.	23.	Dew sensor An element which detects condensation inside the unit. This element is activated, when it senses condensation, to interrupt the mechanism.
11.	Video search brake lever It is in contact with the take-up reel disk normally, and brakes it to a certain degree. It applies larger brake in the videosearch rewind mode.		

FUNCTION OF MAJOR MECHANICAL PARTS (BOTTOM VIEW)



No.	Function	No.	Function
1.	Slow brake lever Gets in contact with the capstan D.D. motor linking to the master cam in the slow still mode, and brakes it to a certain degree.	7.	Reelsensor An element which sheds the light onto the reflection plate affixed to the bottom side of the reel disk, and detects the rotation of the reel disk through receiving the reflected light.
3.	Capstan D.D. motor A motive power which runs the tape. It transmits the power via the reel belt.	8.	Auxiliary fast forward brake lever Brakes the supply reel disk to a certain degree in the fast forward and rewind modes.
4.	Reel belt Transmits the power to run the tape to the reel pulley.	9.	Take-up loading gear Shifts the take-up pole base and guide roller via the loading relay gear, and applies the tape around the drum assembly, as well as transmits the power to the supply loading gear.
5.	Brake solenoid Adsorbs and holds the brake shifter in the fast forward and rewind modes, and releases it in the stop mode.	10.	Supply loading gear Shifts the supply pole base and guide roller via the take-up loading gear, and applies the tape around the drum assembly.
6.	Reel pulley Transmits the power of the capstan D.D. motor to the reel disk via the reel idler.	11.	Relay gear drive lever Transmits the movement of the master cam to the take-up loading gear via the loading relay gear.

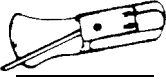
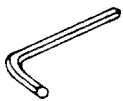
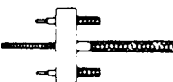
ADJUSTMENT, REPLACEMENT AND ASSEMBLY OF MECHANICAL UNITS

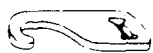
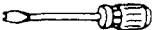
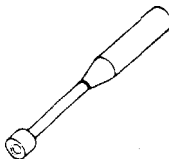
Here we will describe a relatively simple service work in the field, not referring to the more complicated repairs which would require the use of special equipment and tools (drum assembly replacement, for example).

We are sure that the easy-to-handle tools listed below would be more than handy for periodical maintenance to **keep** the machine in its original working condition.

TOOLS NECESSARY FOR ADJUSTING THE MECHANICAL UNITS

The following tools are required for proper service and satisfactory repair.

No.	Jig Item	Part No.	Code	Configuration	Remarks
1	Reel Disk Height Adjusting Jig	JiGRH0002	BR		These Jigs are used for checking and adjusting the reel disk height
2	Master Plane Jig	JiGMP0001	BY		
3	A/C Head Tilt Adjusting Jig	JiGACH-F18	BU		This Jig is used for setting the A/C head tilt.
4	Torque Gauge (90g)	JiGTG0090	CM		These Jigs are used for checking and adjusting the torque of take-up and supply reel disks.
	Torque Gauge (1.2 kg)	JiGTG1200	CN		
5	Gauge Head	JiGTH0006	AW		
6	Cassette Torque Meter	JiGVHT-063	CZ		This cassette torque meter is used for checking and adjusting the torque of take-up for measuring tape back tension.
7	Tension Gauge (300g)	JiGSG0300 B	F		There are two Gauges used for the tension measurements, 300 g and 2.0 kg.
	Tension Gauge (2.0kg)	JiGSG2000 B	S		
8	Hex Wrench (0.9mm)	JiGHW0009	AE		These Jigs are used for loosening or tightening special hexagon type screws.
	Hex Wrench (1.2mm)	JiGHW0012	AE		
	Hex Wrench (1.5mm)	JiGHW0015	AE		
9	Alignment Tape (PAL)	VROCPSV	CD		These tapes are especially used for electrical fine adjustment.
	Alignment Tape (NTSC)	VROATSV	CD		
10	Drum Replacing Jig	JiGDT-0001 B	G		This is used for replacement of the VCR's upper drum.

o.	Jig Item	Part No.	Code	Configuration	Remarks
1	Tension Gauge Adapter	JiGADP003	BK		This Jig is used with the tension gauge. Rotary Transformer Clearance Adjusting Jig.
2	Special Bladed Screwdriver	JiGDRIVERH-4	AP		This Screwdriver is used for adjusting the guide roller height.
3	Tension Band and Plate Adjusting Jig	JiGDRIVER-	BM		This Jig is used for adjusting the tension band and tension plate.
14	Torque Driver	JiGTD1200	CB		This is used to screw down resin-made parts: the specified torque is 5 kg.
15	Box Driver	JiGDRIVER110-7	AS		This Jig is used for height adjustment of the A/C head and X-position.
		JiGDRIVER110-4	AV		This Jig is used for height adjustment of the retaining guide.
16	Retaining Guide Height Adjusting Jig	JiGGH-F18	BU		This jig is used for height adjustment of the retaining guide.
17	Reverse Guide Height Adjusting Jig	JiGRVGH-F18	BU		This Jig is used for height adjustment of the reverse guide.

MECHANICAL PARTS REQUIRING PERIODICAL INSPECTION

Use the following table as a guide to maintain the mechanical parts in good operating condition.

Maintained Parts	500 hrs.	1000 hrs.	1500 hrs.	2000 hrs.	3000 hrs.	Possible symptom encountered	Remarks
Guide roller ass'y	☐	☐	☐	☐	☐	Lateral noises -lead occasionally blocked	Abnormal rotation or significant vibration requires replacement
Supply impedance roller	☐	☐	☐	☐	☐		Clean with pure high quality isopropyl alcohol.
Supply impedance roller (inner hole and shaft)		☐		☐	☐		Clean tape contact part with the specified cleaning liquid.
Supply impedance roller flange B	☐	☐	☐	☐	☐		
Retaining guide	☐	☐	☐	☐	☐		
Slant pole	☐	☐	☐	☐	☐		
Video head	☐	☐ ☐	☐	☐ ☐	☐ ☐	Poor S/N ratio, no colour	Clean tape contact area with the specified cleaning liquid.
Full-erase head	☐	☐	☐	☐	☐	Poor colour, beating	
A/C head	☐	☐	☐	☐	☐	Sound too small or distorted	
Capstan D.D. Motor	☐	☐	☐	☐	☐	No tape running, uneven colour	
Pinch roller	☐	☐	☐	☐	☐	No tape running, tape slack	Clean rubber and rubber contact area with the specified cleaning liquid.
Reel belt		☐		☐	☐	No tape running, tape slack, no fast forward/rewind motion	
Loading belt		☐		☐	☐	Cassette not loaded or unloaded	
Cassette loading belt		☐		☐	☐		
Tension band ass'y					☐	Lateral image swing	
Loading Motor					☐	Cassette not loaded or unloaded	
Automatic Head Cleaner		☐		☐	☐		Replace the roller of the cleaner when it wears down. Just change the video head cleaner arm assembly for new one.
Reel block*						See the chart below	
*See the table below for servicing the reel block parts.							
Supply/take-up reel disks		☐ ☐ ☐		☐ ☐	☐ ☐	No tape running, tape slack	Clean with pure high quality Isopropyl alcohol.
Video search brake lever				☐			
Idler gear ass'y				☐		No tape running	
Reel Pulley		☐ ☐ ☐		☐ ☐	☐ ☐		
Main supply/take-up brake levers				☐		Tape slack	

NOTE: ○: Part replacement.
 □: Cleaning (For cleaning, use a lint-free cloth dampened with pure isopropyl alcohol).
 △: Oil refilling (The indicated point should be lubricated with high quality spindle oil every 1000 hrs).

If the reading is out of the specified value, clean or replace the part.

REMOVAL AND REASSEMBLY OF CASSETTE HOUSING CONTROL ASSEMBLY

● Removal

1. Set the cassette ejected condition in the cassette eject mode.
2. Unplug the recorder from the main source.
3. Follow the procedures below in the specified order.
 - a) Remove the cassette loading belt ①.
 - b) Disconnect the FFC (Full Flat Cable) ②.
 - c) Remove the cassette housing installation screws ③.
 - d) Slide and pull out the cassette housing control assembly upward ④.

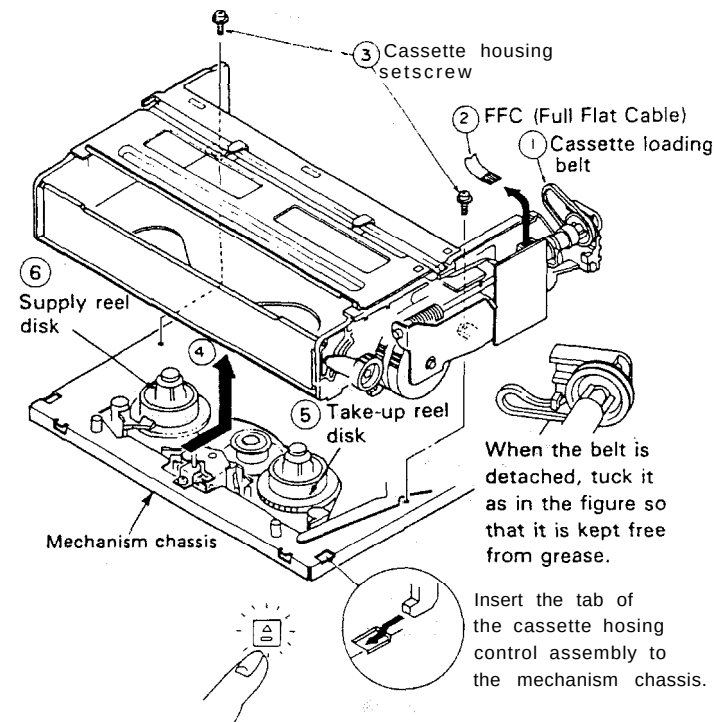


Figure 1-1.

● Reassembly

1. Before installation of the cassette housing control assembly, place the unit in the stop mode with the power on, then unplug the power cord. (The main body is placed in the eject mode.)
2. Follow the procedures for removal in the reverse order.

Notes:

1. Be sure to unplug the power cord in removal and reassembly.
2. Keep the cassette loading belt free from grease. In case of its adhesion, clean the belt.
3. In using a magnet screw driver, be sure to keep it away from the A/C head, FE (Full Erase) head, or the drum.
4. In removal and reassembly, take care not to hit the cassette housing control assembly or tools against the guide pin, drum, or the like thereabout.

5. Place the unit in the eject mode in removal or reassembly of the cassette housing control assembly.
6. Load the cassette once onto the cassette housing control assembly after reassembly. (If the cassette housing control assembly normally operates after this, the phases of mechanism and the cassette controller are accurately adjusted after ejection.)

MECHANICAL OPERATION CHECK WITHOUT CASSETTE

When power is on, the general operations of the mechanism can be checked without a cassette. Note the following points.

1. Check video search rewind and rewind, rotating the take-up reel disk ⑤ by hand (in either normal or reverse direction). If it is not rotated, the reel sensor works to shift the mechanism to the eject mode.
2. When the stop button is pressed, the mechanism does not stop at a normal stop position. It shifts to the eject mode and stops.
3. When the stop button is pressed in the playback, video search rewind, and video search forward modes, the supply reel disk ⑥ keeps on rotating for several seconds for elimination of tape slack in the course of shifting to the eject mode. In such a case, rotate the take-up reel disk ⑤ somewhat by hand, and the supply reel disk ⑥ stops, which can reduce the working time.

REPLACEMENT OF WORM WHEEL ASSEMBLY

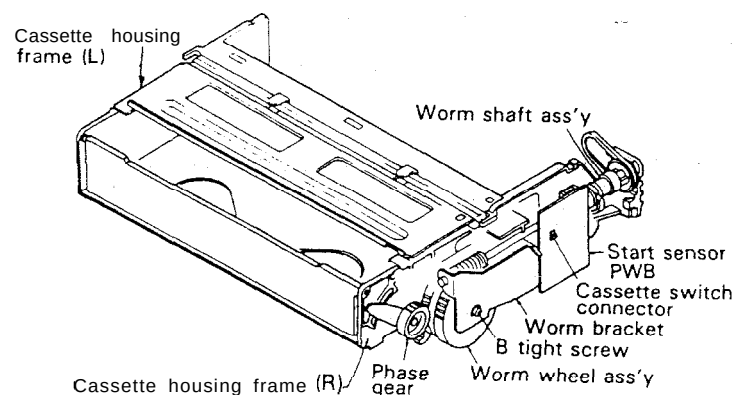


Figure 1-2.

Removal

1. Unsolder the cassette switch connectors (No. 16, 17) from the start sensor PWB.

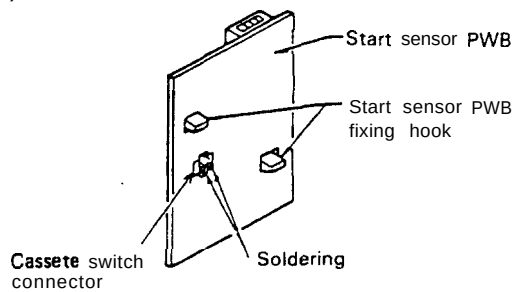


Figure 1-3.

2. Lift the start sensor PWB pressing the two start sensor PWB fixing hooks inward.

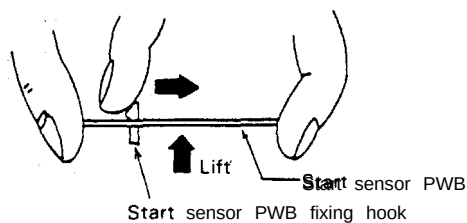


Figure 1-4.

3. Unscrew one B tight screw to detach the worm bracket.

Note: The worm shaft bearing can easily come out of position. So be careful not to lose it.

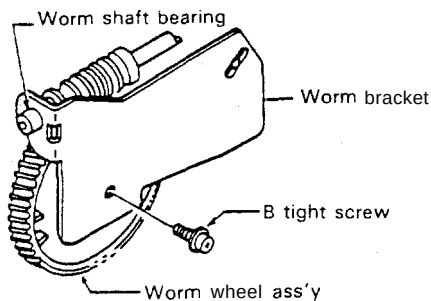


Figure 1-5.

4. Remove the worm shaft assembly, pulley, and cassette loading belt all from the cassette housing frame (R).

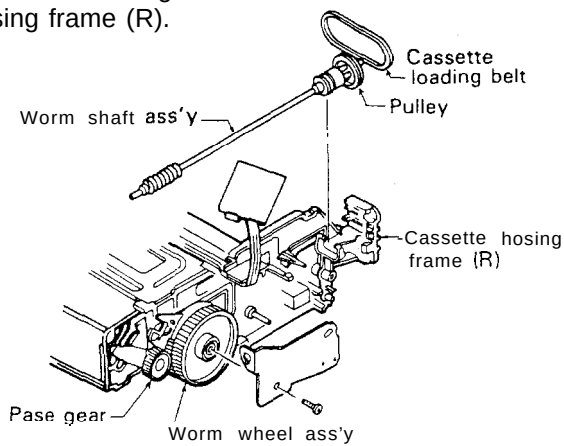


Figure 1-6.

5. Place the slider pin just above the worm wheel (Figure 1-7). (The retainer of the slider is locked at two positions when. So unlock it as in the Figure 1-8.)
6. Pull out the worm wheel assembly toward you pressing the switch lever upward. (Figure 1-7)

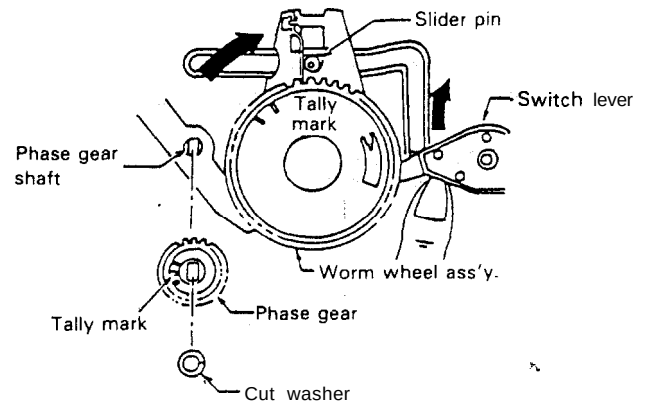


Figure 1-7.

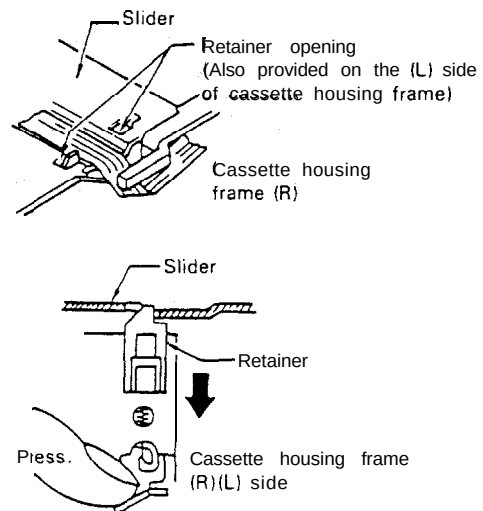


Figure 1-8.

Reassembly

1. Turn the phase gear clockwise until the slider comes to a halt in the cassette insertion direction. (See the Figure 1-9.)
2. Insert the set up worm wheel gear assembly into the cassette housing frame (R), matching the mark on the phase gear with the mark on the worm wheel gear. Detach the cut washer on the phase gear assembly and the phase gear for easier installation of worm wheel assembly.

Note: Make sure that the slider pin is in the groove of the drive gear arm.

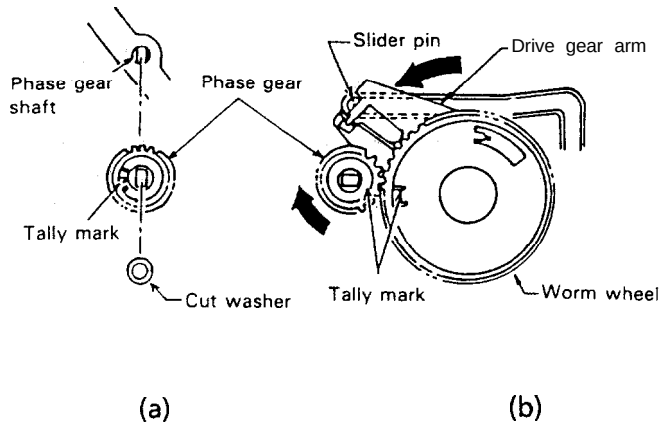


Figure 1-9.

3. install the pulley and the cassette loading belt on the worm shaft assembly. Couple the clutch to the clutch lever. And mount them together in the cassette housing frame (R).

Note: Keep in mind that the clutch switching lever should be in the correct position. The mechanism might malfunction if the lever is slightly out of position. (See page 14.)

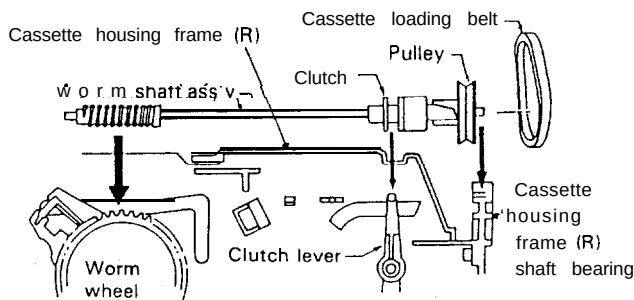


Figure 1-10.

4. Attach the worm bracket to the worm shaft assembly. Place them onto the boss on the cassette housing frame (R).

Note: Insert ① before screwing into ② and ③.

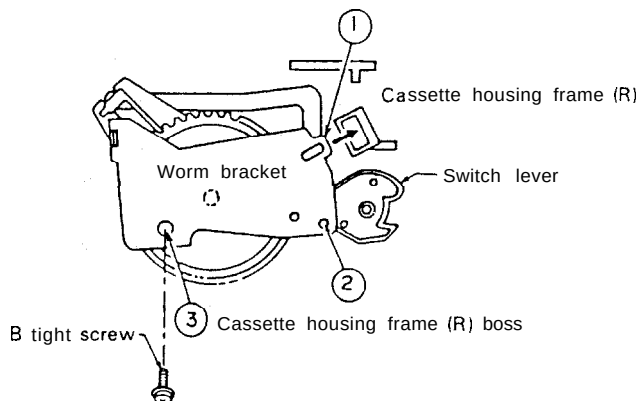


Figure 1-11.

5. Tighten one B tight screw.

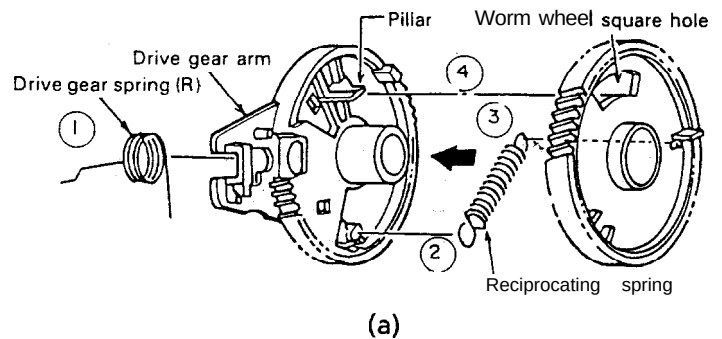
Note: Do not **overtighten** the B tight screw (no more than $5.0 \pm 0.5 \text{ kg.cm}$), because the lower threads of the screw hole at the resin-made boss can be broken.

6. Place the start sensor PWB on the cassette housing frame (R).

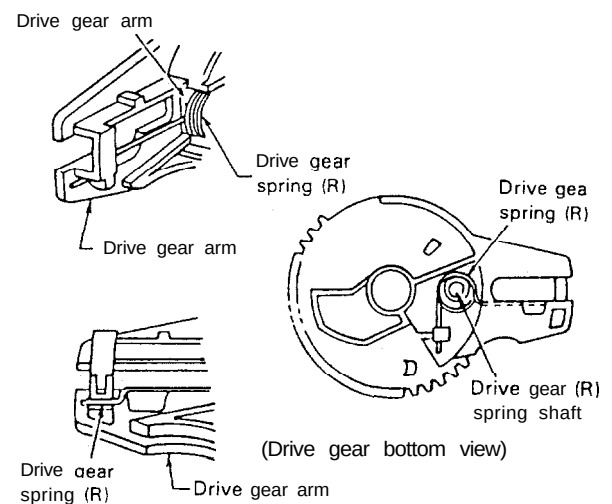
Note: Check that the switch connectors (No. 16, 17) are in the cassette switch mounting hole.

7. Finally resolder the cassette switch connector to the start sensor PWB.

REASSEMBLY OF DRIVE GEAR



(a)



(b)

Figure 1-12.

1. Pass the tip of the drive gear spring (R) ① through the square hole of the drive gear (R) to hook the spring in position.
2. Hook one end ② of the reciprocating spring to the catch of the drive gear(R).
3. Hook the other end ③ of the reciprocating spring to the catch of the worm wheel.
4. insert the pillar ④ of the drive gear (R) into the square hole of the worm wheel. Turn the worm wheel somewhat counterclockwise for insertion of the worm wheel to the drive gear (R), because the reciprocating spring is at work.

REPLACEMENT OF CASSETTE LOADING BELT

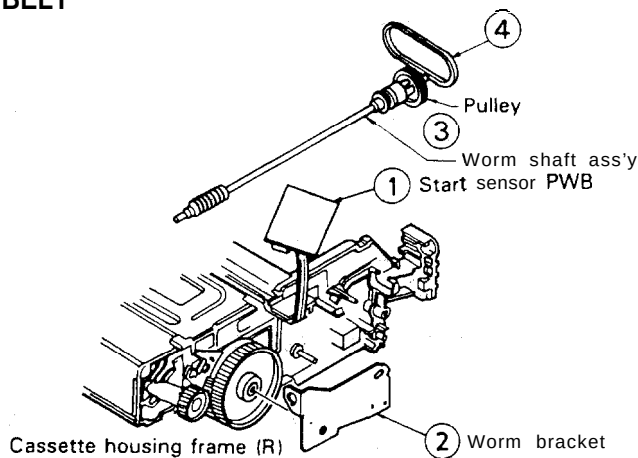


Figure 1-13.

1. Remove the start sensor PWB ① and worm bracket ② from the cassette housing frame (R).
2. Remove the worm shaft assembly ③.
3. Replace the cassette loading belt ④ with a new one.

Notes:

1. Do not overtighten the B tight screw which holds the worm bracket in position. The specified torque is 5.0 ± 0.5 kg.cm.
2. Make sure that the cassette loading belt is free from grease. If stained with grease, clean the belt with the cleaning liquid.
3. Perform checking of the clutch switch lever for proper action.

CHECKING THE CLUTCH SWITCH LEVER

• Checking

Place the mechanism in the cassette eject mode when removing and attaching the cassette housing from and to the mechanism chassis.

Make sure enough that each part in the cassette housing such as the clutch switch lever is in position. If not, it causes malfunction.

Note :

Figure 1-14 shows the position of each part in the cassette eject mode.

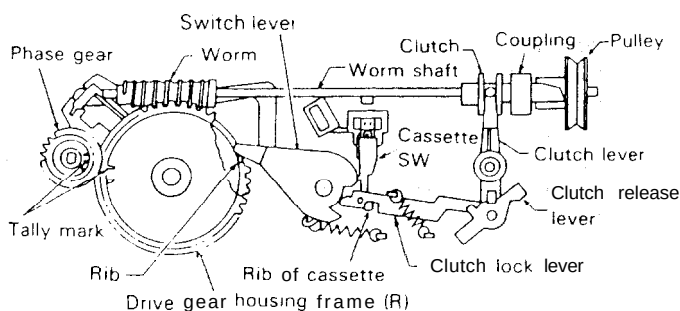
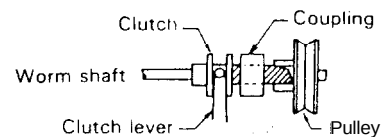


Figure 1-14

1. First make sure that the tip of the switch lever is held at the rib of the drive gear (R).
2. Check that the rib of the cassette housing frame (R) and the concavity of the clutch lock lever are engaged.
3. Finally be sure that the relationship between the clutch lever and the clutch, as well as between the clutch and the pulley, are correct as in the Figure 1-15.



Check that the clutch is engaged with the pulley through the coupling.

Figure 1-15.

• Resetting

Take the following steps to reset the clutch if it is unlocked or if the switch lever and the clutch lock lever are unlocked.

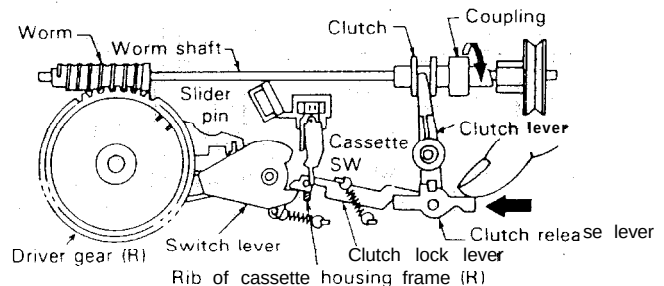


Figure 1-16.

1. Shift the slider by turning the coupling in the arrow direction (clockwise) until the slider pin is at the bottom of the slider groove as shown in the Figure 1-16. (The loading mode)

Note: Note that the slider is equipped with a lock mechanism. Unlock the locks on cassette housing frame (L) and (R) side before shifting the slider.

2. When the position is set as shown in the Figure 1-16, push the clutch release lever in the direction of the arrow by hand until the clutch lock lever becomes tightly locked by the rib of the cassette housing frame (R).

3. Then turn the coupling counterclockwise until the slider reaches the cassette insertion opening and the reciprocating spring is activated.

Note: There is no need to unlock the slider when shifting the slider to the cassette insertion opening. Just keep shifting the slider.

REPLACEMENT OF LOCK RELEASE LEVER

● Removal

1. Place the slider in the cassette down position. (Turn the coupling on the worm shaft clockwise until the slider is in the cassette down position.)
Note: Before shifting, unlock the slider.
2. Slightly widen the cassette housing frames (R) and (L) to unhook the slider holders (R) and (L) of the slider assembly off the grooves of the cassette housing frames.

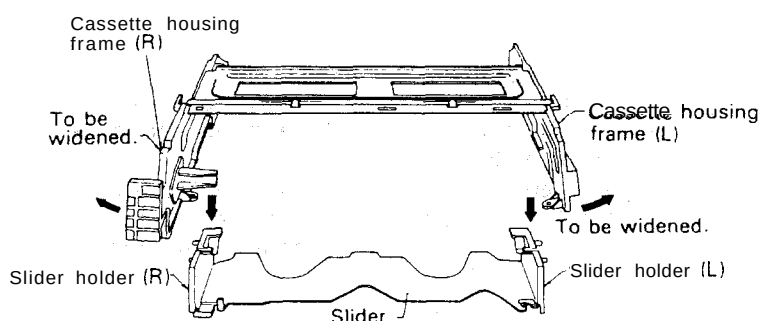
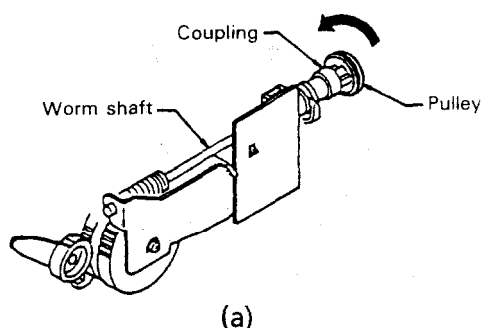


Figure 1-17.

3. Lift the slider holder (R) upward about 2mm off the slider by pressing two catches with a thin tip screw driver. Take care not to damage the catches.

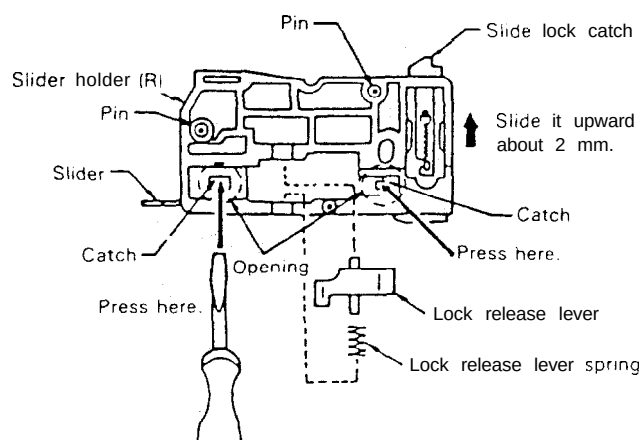


Figure 1-18.

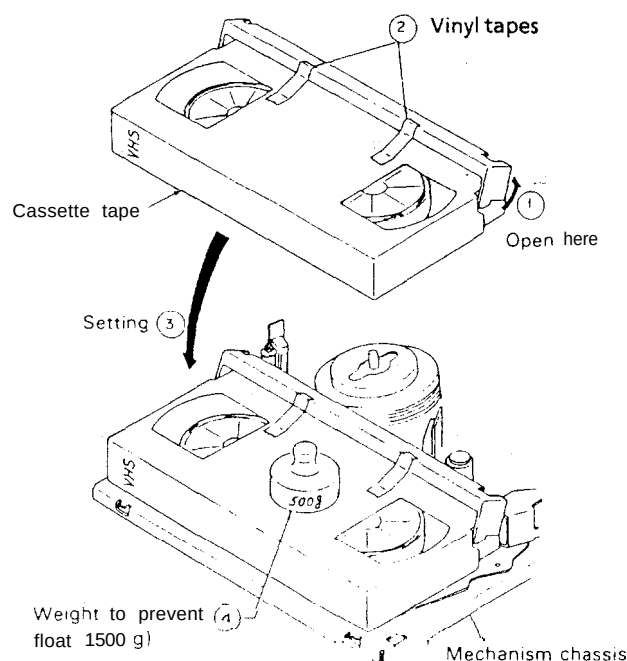
4. Remove the lock release lever from the slider holder(R)

● Reassembly

1. Follow the steps for removal in the reverse order. (See Figures 1-17 and 1-18.)
2. Attach the lock release lever to the slider holder (R).
3. Slide the slider holder (R) downward so that the two catches of the slider holder (R) fit the opening of the slider.
4. Slightly widen the cassette housing frames, and set the pins of slider holders (R) and (L) into the grooves of the cassette housing frames.
Note: Check if the pins of the slider holders (R) and (L) fit the grooves of the cassette housing frames, and if the drive gear arm is sufficiently engaged with the slider holders.
5. Turn the coupling counterclockwise until the slider is at the cassette insertion opening.

TO RUN A TAPE WITHOUT THE CASSETTE HOUSING CONTROLASSEMBLY

1. Plug in the power cord.
2. Turn on the power switch.
3. Open the lid ① of a cassette tape by hand.
4. Hold the lid with a pair of vinyl tapes ②.
5. Set the cassette tape in the mechanism chassis.
6. Weight the cassette tape with a weight ④ to prevent float.
7. Perform running test.



Note: The weight should not be more than 500 g.

Figure 1-19.

REPLACEMENT AND HEIGHT CHECKING AND ADJUSTMENT OF REEL DISKS

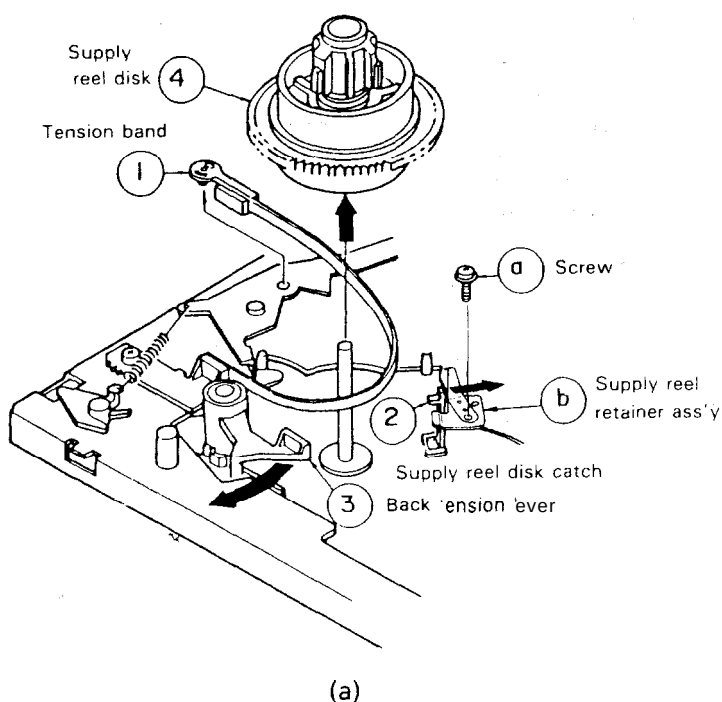
1. Remove the cassette housing control assembly.
2. Set the mechanism in the playback mode with no cassette tape in place. Unplug the power cord.
3. Set the idler gear in the center (neutral).

● Removal (Supply reel disk)

1. Remove the tension band ①. (Take care not to deform it.)
2. Unscrew the screw ② and remove the supply reel retainer assembly ③.
3. Release the supply reel disk catch and back tension lever ④.
4. Pull the supply reel disk upward.

Notes :

1. Take care not to deform the tension band.
2. Check and adjust the tension pole position. (See page 21.)
3. Be careful not to damage the gear and the idler gear on the supply reel disk.
4. Press the tension band in the direction of the arrow for removal (see Figure 1-20(b)).



Note : When the tension band is pressed in the direction of the arrow for removal, the catch is hard to be deformed.



(b)
Figure 1-20.

● Removal (Take-up reel disk)

1. Unscrew the screw ① and remove the take-up reel retainer.
2. Release the take-up reel disk catch ②.
3. Pull the take-up reel disk ③ upward.

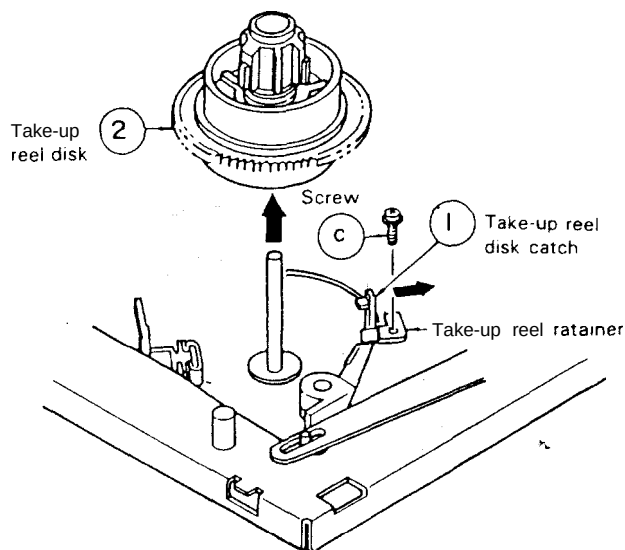


Figure 1-21.

● Reassembly (Supply reel disk)

1. Clean the reel disk shaft ① and apply oil to it.
2. Release the supply reel disk catch ② and back tension lever ③.
3. Install a new supply reel disk ④ onto the shaft.
4. Replace the tension band ⑤ around the supply reel disk, and insert it to the hole of the tension arm.
5. Replace the supply reel retainer assembly ⑥ in place, and tighten up the screw ⑦.

Notes :

1. Take enough care not to deform the tension band during installation of the supply reel disk.
2. Be careful not to damage the supply reel disk gear, back tension lever, catch, or the like with tools.

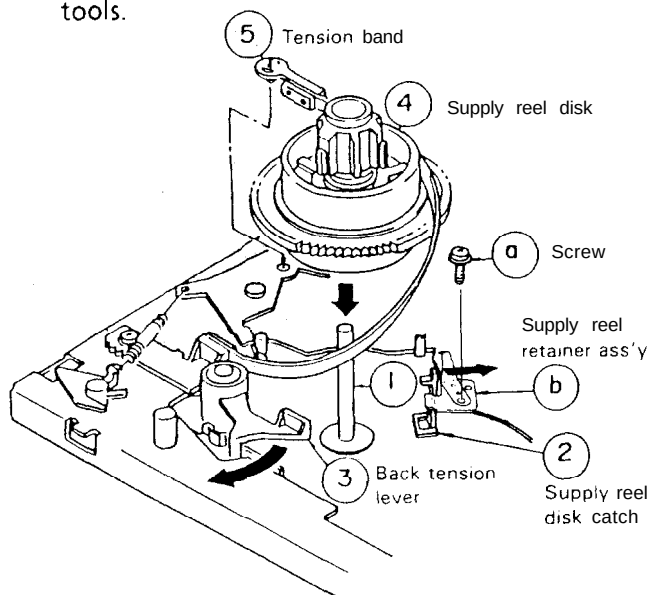


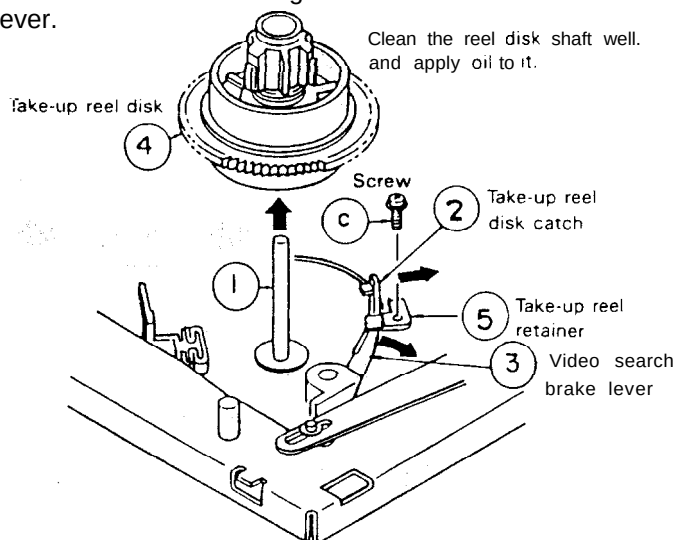
Figure 1-22

- Reassembly (Take-up reel disk)

1. Clean the reel disk shaft ① and apply oil to it.
2. Release the take-up reel catch ② and video search brake lever ③.
3. Install a new take-up reel disk ④ onto the shaft.
4. Replace the take-up reel retainer ⑤ in position and tighten up the screw ④.

Note :

Take care not to damage the video search brake lever.



Apply a thintipdriver to the arrow position in releasing for easier setting of the take-up reel disk

Figure I-23.

- ★ After reassembly, check the video search rewind back tension (see page 20), and check the brake torque (see page 22).

- Height checking and adjustment

Note:

Place the master plane onto the mechanism unit, taking care not to hit the drum (see Figure I-24)

1. For height adjustment, press the reel disk with a finger, and turn it right and left with a screwdriver (see Figure I-26 (a)).

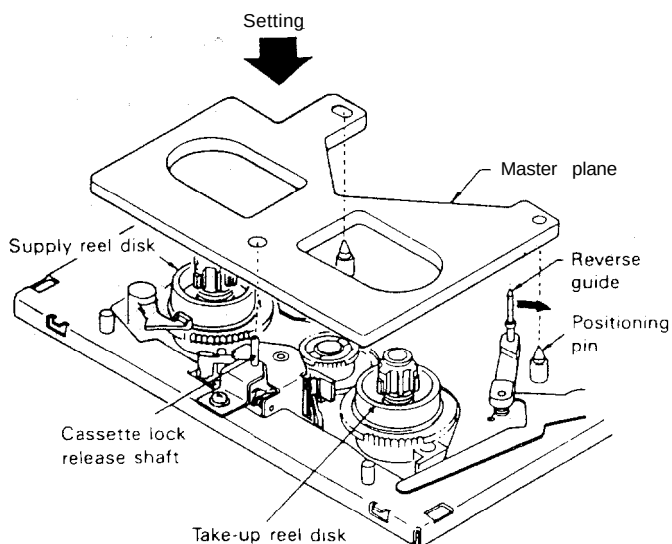


Figure I-24.

Set the master plane releasing the reverse guide by a finger.

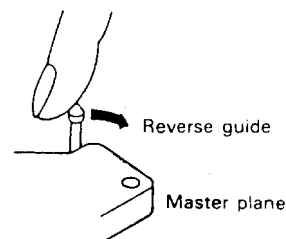
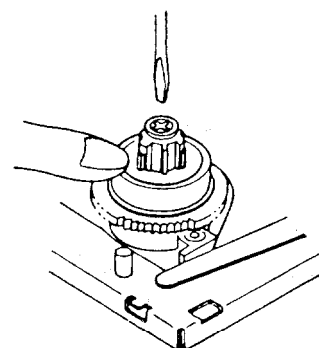


Figure I-25.

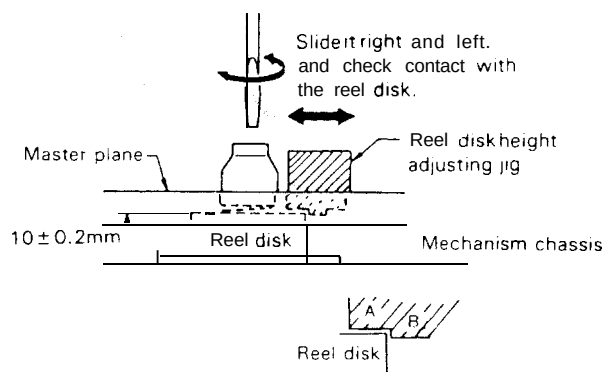
2. Check that the reel disk is lower than part A but higher than part B. If the height is not correct, adjust the height adjusting screw (see Figure I-26 (b)).

Note :

Whenever replacing the reel disk, perform the height checking and adjustment.



(a)



(b)

Figure I-26

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN FAST FORWARD MODE

- Remove the cassette housing control assembly.
- Setting

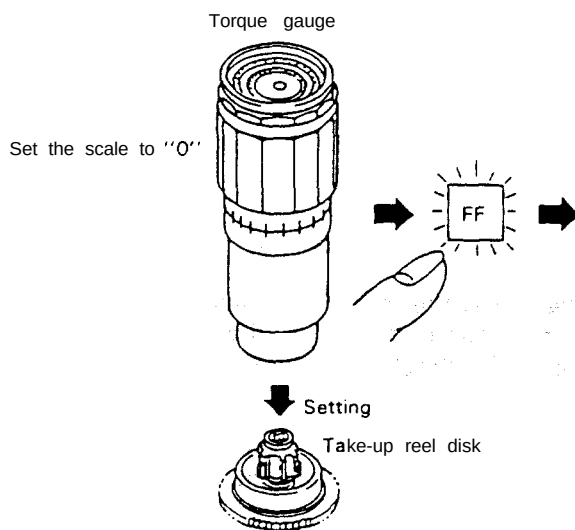


Figure I-27.

• Checking

Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by hand in the take-up direction

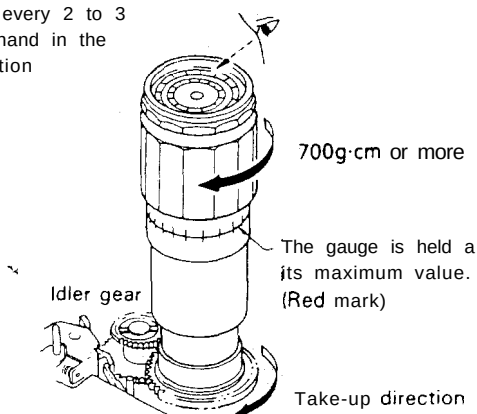


Figure I-28.

• Adjustment

1. If the take-up torque is outside the range, clean the capstan D.D. motor pulley, reel belt and reel pulley with cleaning liquid, then recheck the torque.
2. If the take-up torque is still out of range, replace the reel belt.

Notes :

1. Hold down the torque gauge so that it may not fly off.
2. When checking the take-up torque, do not keep the reel disk locked for a longer time.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN REWIND MODE

- Remove the cassette housing control assembly.
- Setting

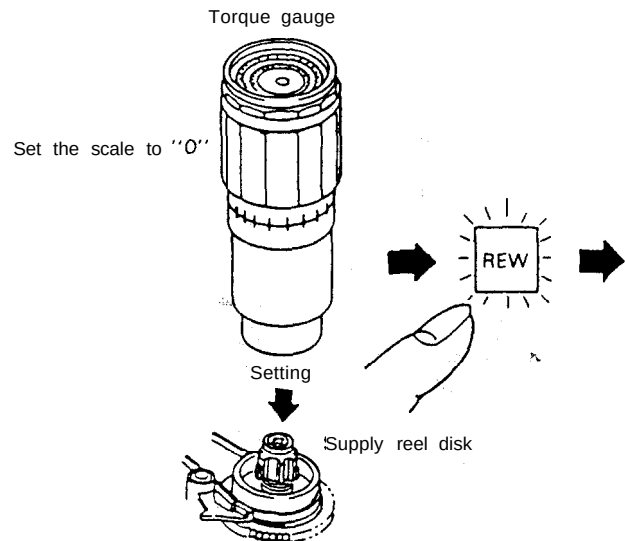


Figure I-29.

• Checking

Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by hand in the take-up direction

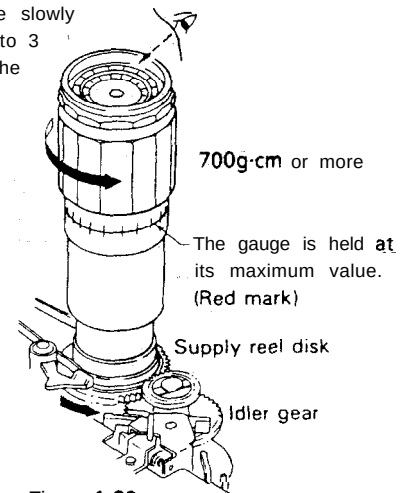


Figure 1-30.

• Adjustment

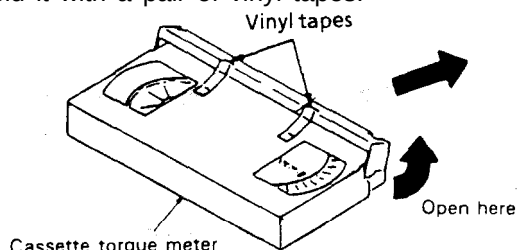
1. If the take-up torque is outside the range, clean the capstan D.D. motor pulley, reel belt and reel pulley with cleaning liquid, then recheck the torque.
2. If the take-up torque is still out of range, replace the reel belt.

Notes :

1. Hold down the torque gauge so that it may not fly off.
2. When checking the take-up torque, do not keep the reel disk locked for a longer time.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN PLAYBACK MODE

1. Remove the cassette housing control assembly.
2. Open the lid of the cassette torque meter, and hold it with a pair of vinyl tapes.



Cassette torque meter

Load a cassette torque meter into the unit

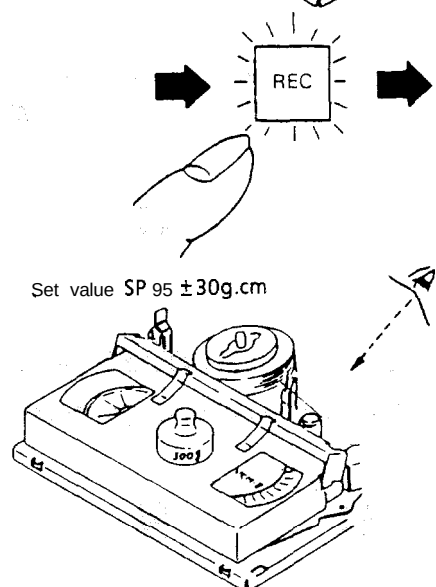
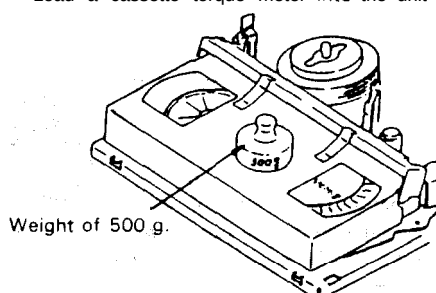


Figure 1-31.

• Checking

1. Check that the torque is in the range of 95 ± 30 g·cm.
2. The torque fluctuates due to the rotational deviation of the reel drive unit. Use the center of the fluctuation as the value.
3. Place the unit in the SP record mode, and check that the take-up torque is within the range.

• Adjustment

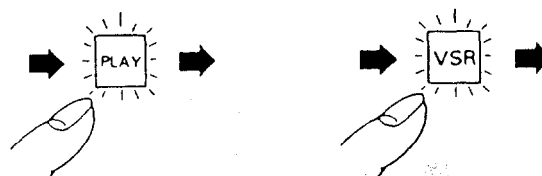
If the take-up torque in the playback mode is outside the range, replace the take-up reel disk.

Note: Weight the cassette torque meter to prevent float.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN VIDEO SEARCH REWIND MODE

- Remove the cassette housing control assembly.

• Checking



Push the play button to place the unit in the playback mode. Push the video search rewind button to place the unit in the video search rewind mode.

Place the torque gauge on the supply reel disk, and turn it **counterclockwise** very slowly (one rotation every 2 to 3 seconds) and check that the torque is within the set value 170 ± 40 g·cm.

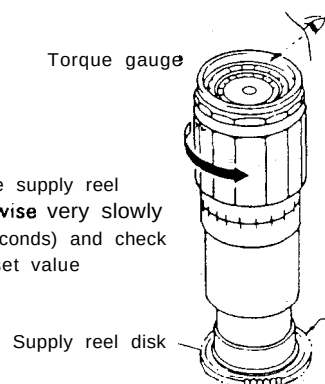


Figure 1-32.

Note:

Set the torque gauge securely on the supply reel disk. If it is not secure, the measurement will be incorrect.

• Adjustment

If the take-up torque in video search rewind mode is outside the range, replace the supply reel disk.

Note :

The torque fluctuates due to the rotational deviation of the supply reel disk. Use the center of the fluctuation at the value.

CHECKING THE FAST FORWARD BACK TENSION

- Remove the cassette housing control assembly.
- Checking

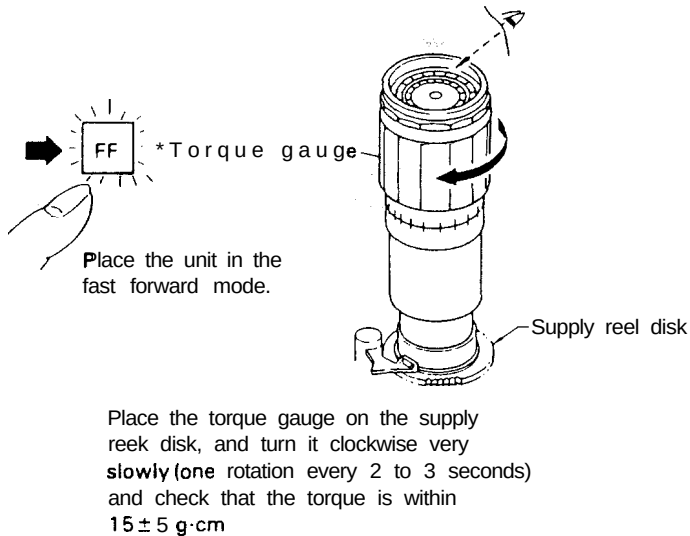


Figure I-33.

Note :

Set the torque gauge securely on the supply reel disk. If the torque gauge is not securely set on the reel disk, measurement will be incorrect.

CHECKING THE REWIND BACK TENSION

- Remove the cassette housing control assembly.
- Checking

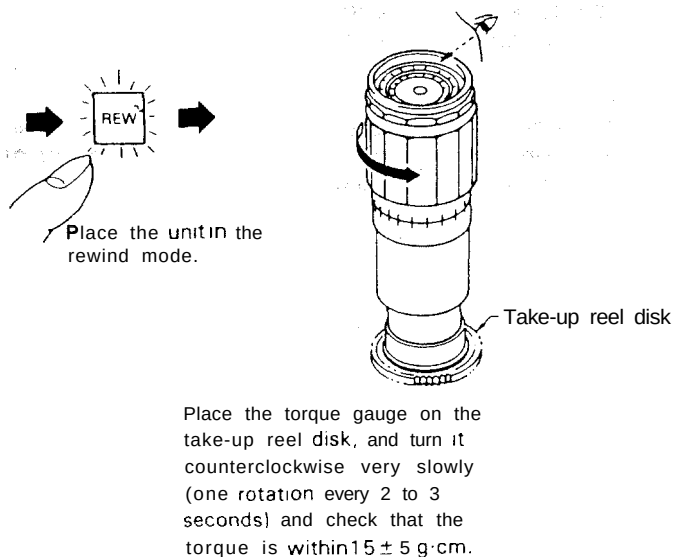


Figure I-34.

Note :

Set the torque gauge securely on the take-up reel disk. If it is not secure, the measurement will be incorrect.

CHECKING THE VIDEO SEARCH REWIND BACK TENSION

- Remove the cassette housing control assembly.
- Checking

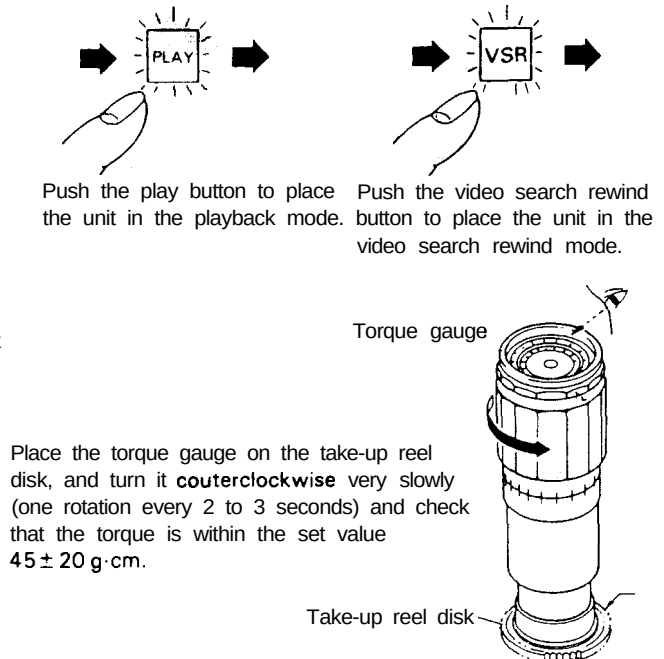


Figure 1-35.

Note :

Set the torque gauge securely on the take-up reel disk. If it is not secure, the measurement will be incorrect.

CHECKING THE PINCH ROLLER PRESSURE

- Remove the cassette housing control assembly.

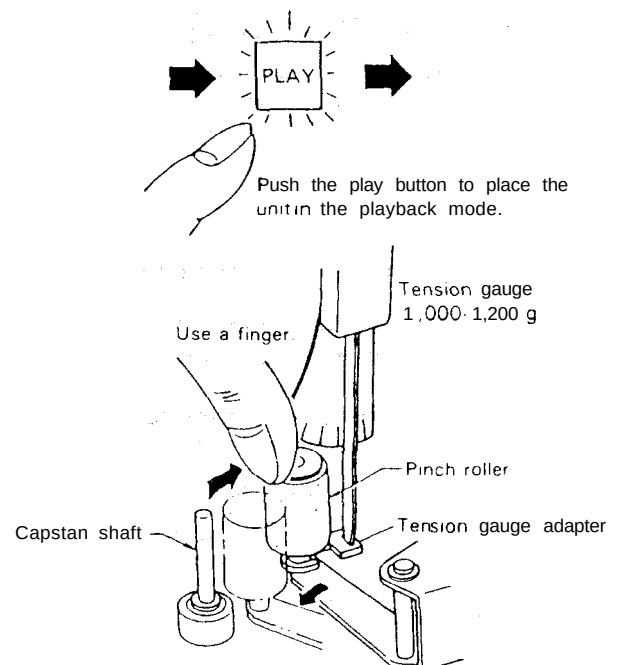


Figure I-36.

1. Detach the pinch roller from the capstan shaft.
2. Set the tension gauge by hooking the tension gauge adapter onto the pinch roller shaft.
3. Gradually release the pressure to allow the pinch roller to touch the capstan shaft. When the pinch roller just touches the capstan shaft, read the indication on the gauge.
4. Check that the reading of the tension gauge is in the range of 1000 to 1200 g.

CHECKING AND ADJUSTMENT OF TENSION POLE POSITION

- Remove the cassette housing control assembly.

• Setting

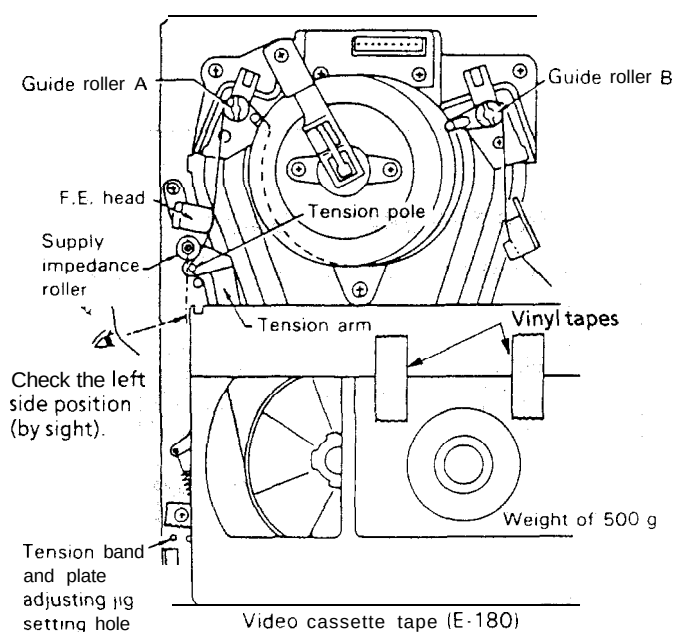
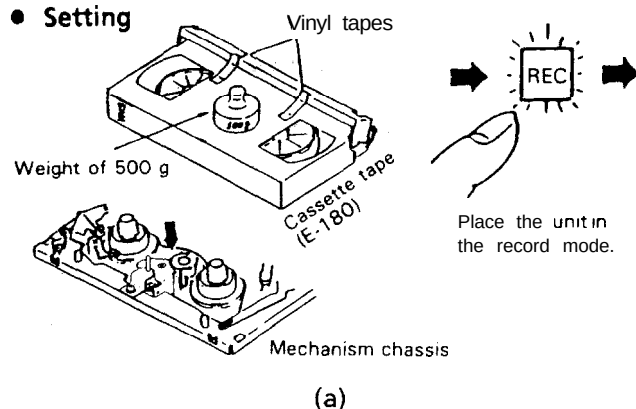


Figure I-37.

• Checking

1. The guide rollers (A, B) operate to bring the tape outside the cassette tape and simultaneously the tension pole moves to the left, loading the tape. At that time (loading completed), check the position of the tension pole.

2. At the beginning of the tape (E-180), check that the tension pole's left side is aligned with the supply impedance roller's left side by sight.
3. Check that the end of the tape is neither curled against the flange of the supply impedance roller nor over it.
4. During the video search rewind mode with no cassette tape in place, check that the supply reel disk is free from the tension band.

• Position adjustment (record mode)

When the tension pole is at the right of the supply impedance roller's center:

Untighten the tightening screw, and shift the tension band adjustment bracket in the direction of the arrow using a tension band and plate adjusting jig until it is in the set value range (left side). Then secure it with the tightening screw.

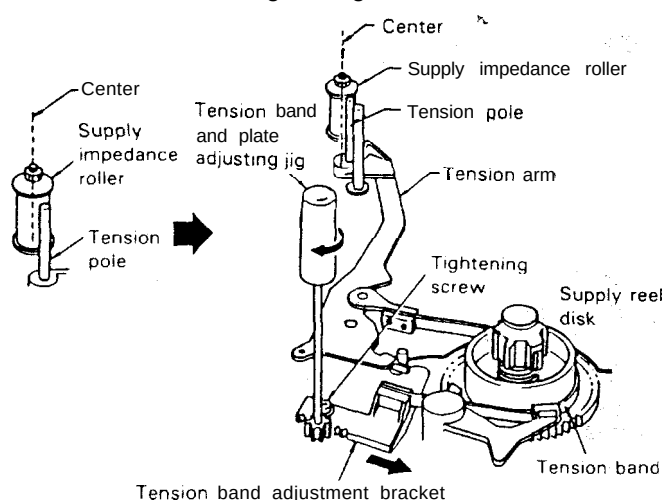


Figure I-38.

• Position adjustment (record mode)

When the tension pole is at the left of the supply impedance roller's center:

Untighten the tightening screw, and shift the tension band adjustment bracket in the direction of the arrow using a tension band and plate adjusting jig until it is in the set value range (left side). Then secure it with the tightening screw.

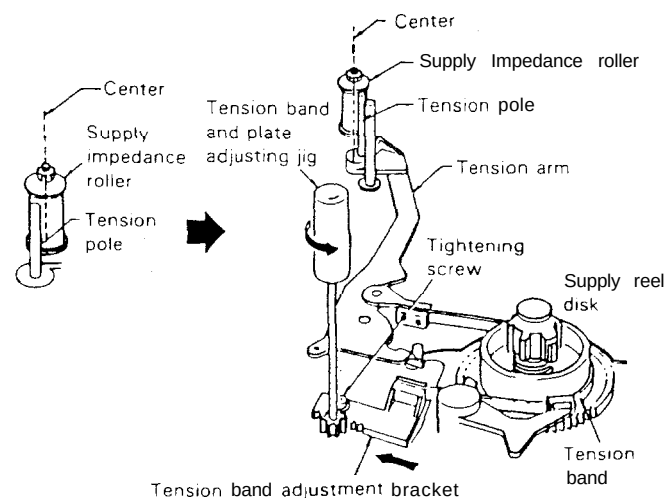


Figure I-39.

CHECKING AND ADJUSTMENT OF RECORD / PLAYBACK BACK TENSION

- Remove the cassette housing control assembly.

- Checking**

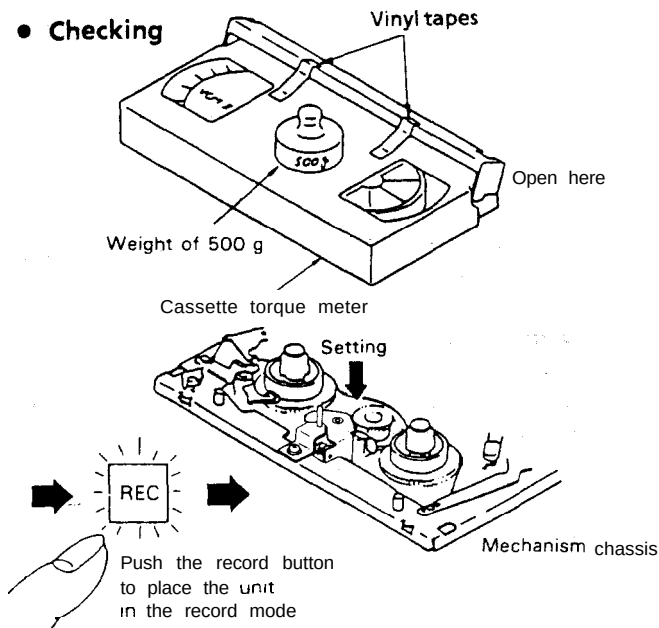


Figure 1-40.

- Put a cassette torque meter into the unit.
- Push the record button to place the unit in the record mode.
- Check that the back tension indicated by the gauge is within the set range 31 to 36 g.cm.

Notes :

- Make sure that the video cassette tape is over the retaining guide.
- Make sure that the tape is not slack nor damaged at either end.

- Adjustment**

- If the reading of the cassette torque meter is less than specified, move the tip of the tension spring hook plate toward the hole A.
 - If the reading of the cassette torque meter is more than specified, move the tip of the tension spring hook plate toward the hole B.
- * Put a thin screw driver (–) in the shaft hole, lean it toward you, and turn it for easier shift of the tension spring hook plate in the direction of A or B.

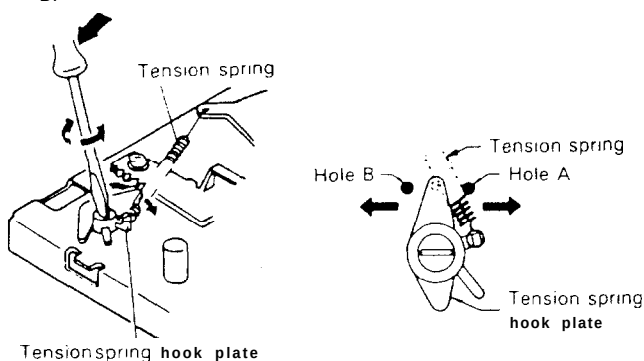


Figure 1-41

Figure 142. Not used.

CHECKING THE BRAKE TORQUE

- Checking the brake torque at the supply side

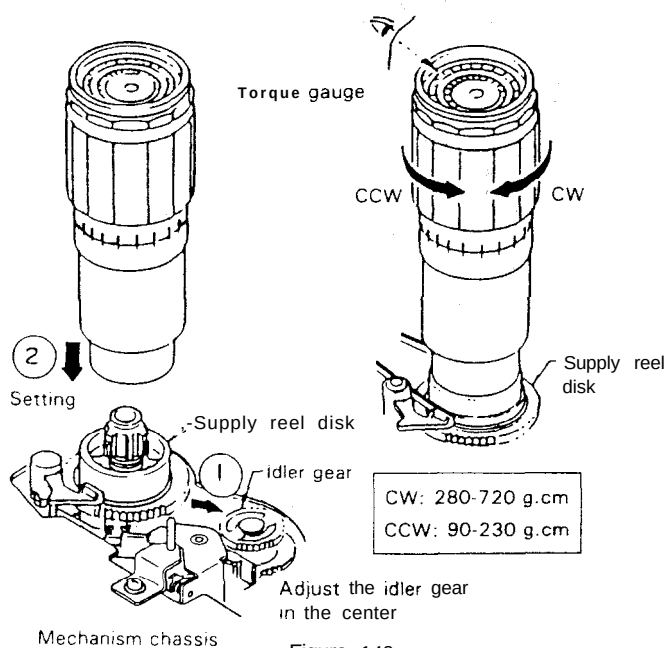


Figure 143.

1. Remove the cassette housing control assembly.
2. Place the mechanism in the stop mode by unplugging the power cord in the fast forward or rewind mode.
3. Slowly rotate the torque gauge in the clockwise (CW) direction and counterclockwise (CCW) direction of the supply brake so that the reel disk and the indicator of the torque gauge rotate at an equal rate. Check that the values are within the range of CW direction = 280 to 720 g·cm, CCW direction = 90 to 230 g·cm, and that the brake torque in the CW direction is at least twice as high as that in the CCW direction.

● Checking the brake torque at the take-up side

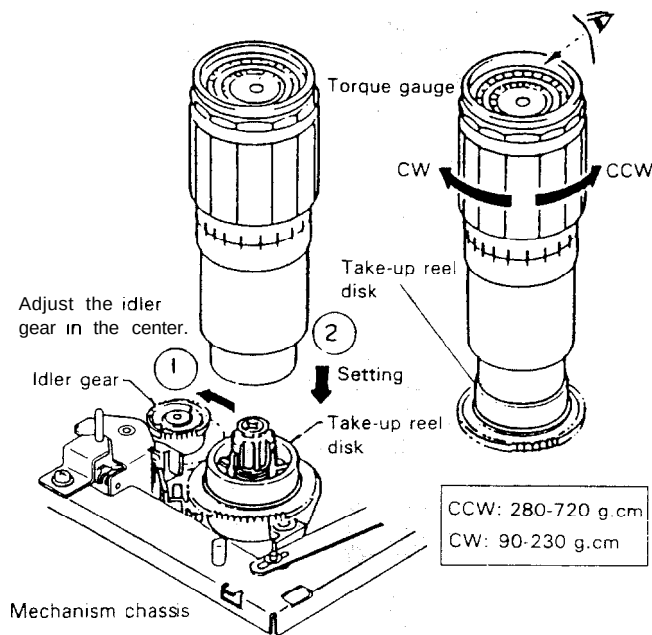


Figure I-44.

1. Remove the cassette housing control assembly.
2. Slowly rotate the torque gauge in the clockwise (CW) direction and counterclockwise (CCW) direction of the take-up brake so that the reel disk and the indicator of the torque gauge rotate at an equal rate. Check that the values are within the range of CCW direction = 280 to 720 g·m, CW direction = 90 to 230 g·m, and that the brake torque in the CCW direction is at least twice as high as that in the CW direction.

- Adjustment of the brake torque at the supply side and the take-up side
1. If the supply or take-up brake torque is outside the range, clean the supply or take-up reel disk break lever felt, then recheck the torque.
 2. If the supply or take-up brake torque is still outside the range, replace the main brake or the main brake spring.

REPLACEMENT OF MAIN BRAKE

1. Remove the reel belt and the reel block FFC.
2. Remove the cut washer ① off the brake shifter.
3. Unscrew the four screws ② and then the take-up reel retainer.
4. Remove the reel block assembly ④ downward.
5. Remove the cut washer ③ first and then the reel pulley.
6. Unscrew the two screws ④ and detach the idler assembly.
7. Unhook the back tension lever spring ⑤ and remove the back tension lever ⑥. (Undo the hook under the reel chassis.)
8. Open the shifter latch ⑦ and remove the brake shifter assembly ⑧.
9. Release the reel disk catches ⑩ and then remove the left and right reel disk assemblies ⑨ and ⑩.
10. Finally remove the main brake levers ⑪ and main brake spring ⑫.

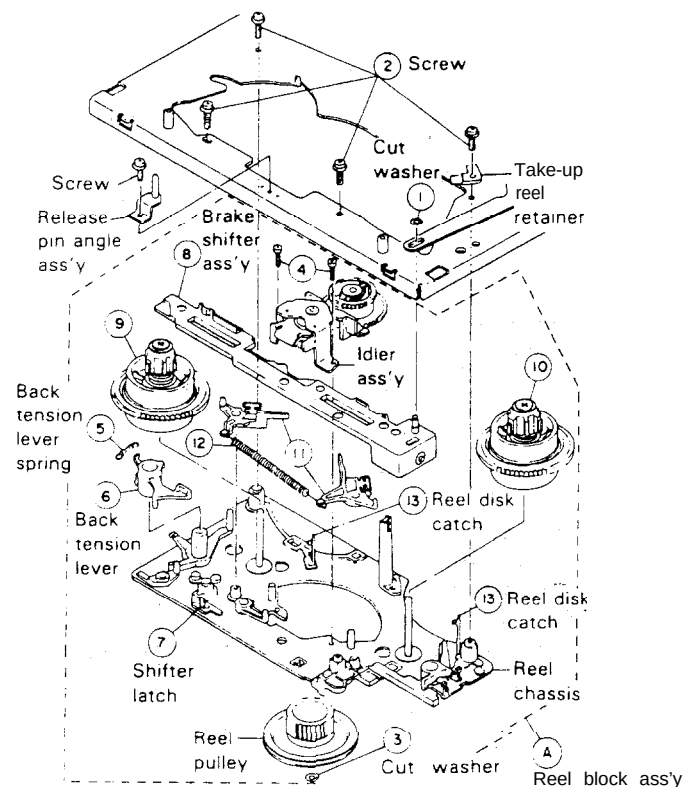


Figure 1-45.

Note :

When the main brake is replaced, perform the height checking and adjustment (see page 17), and the brake torque checking (see page 22).

REPLACEMENT OF A/C (Audio/Control) HEAD

1. Remove the cassette housing control assembly.
2. Place the unit in the unloading mode, and **unplug** the power cord.

● Removal

1. Loosen the tilt adjusting screw ①.
2. Remove the azimuth adjusting screw ②.
3. Remove the **A/C** head screw ③.
4. Unsolder the A/C head PWB soldered to the A/C head assembly.

Note :

1. After replacement, be sure to perform the adjustment of the tape drive train (see page 26). Under any circumstances, avoid touching the head. Clean the head, if touched with your finger, with alcohol.
2. Take care that the azimuth spring does not fly off when removing the NC head screw.

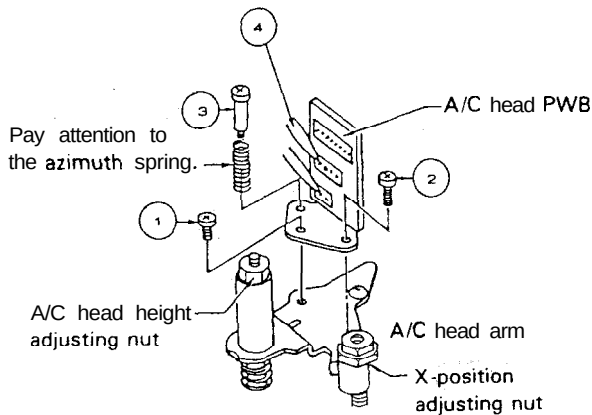


Figure 146.

● Replacement

1. Solder the removed A/C head PWB onto a new A/C head assembly.
2. The A/C head assembly is attached so that the A/C head arm and A/C head plate are roughly parallel to each other.

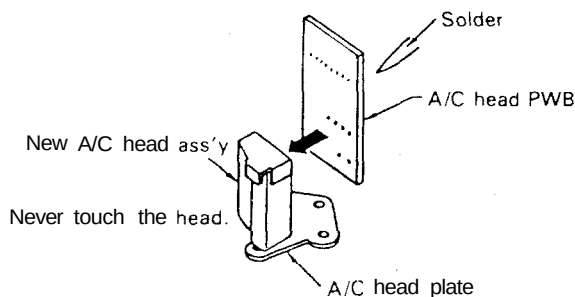


Figure 1-47.

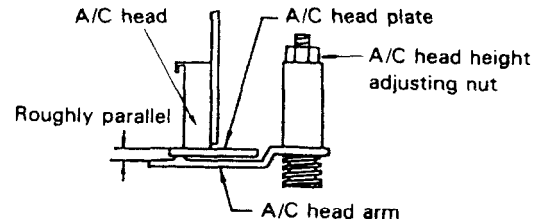
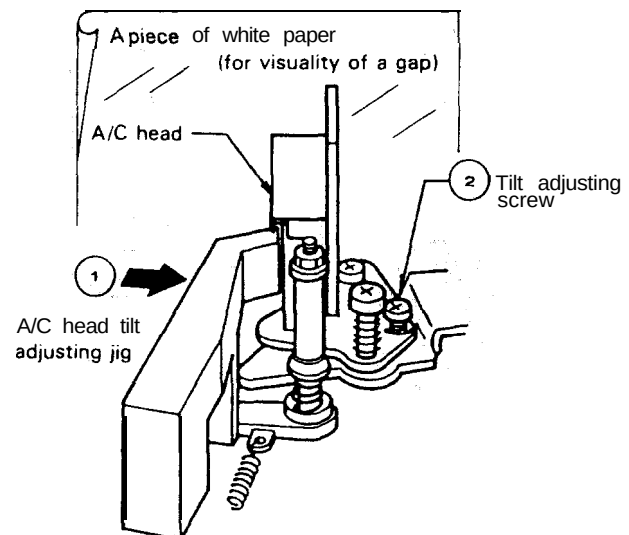


Figure 1-48.

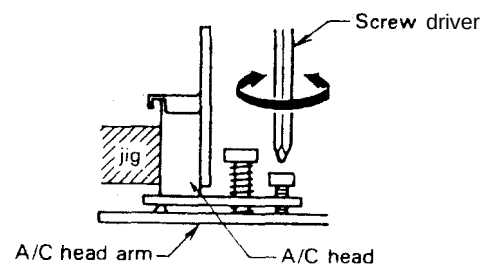
● Adjustment

[A/C head tilt angle]

1. Set the mechanism to the loading mode.
2. Place the **A/C** head tilt adjusting jig.
3. Slowly turn the tilt adjusting screw with a screw driver **until** there is no gap between the jig and the A/C head.



(a)



(b)

Figure 1-49.

[A/C head height rough adjustment]

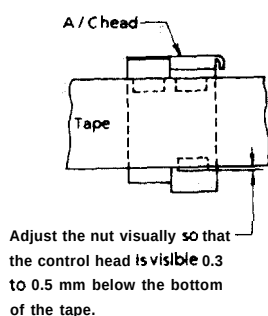
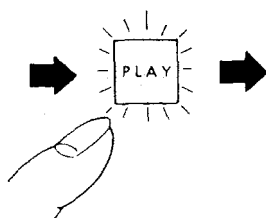
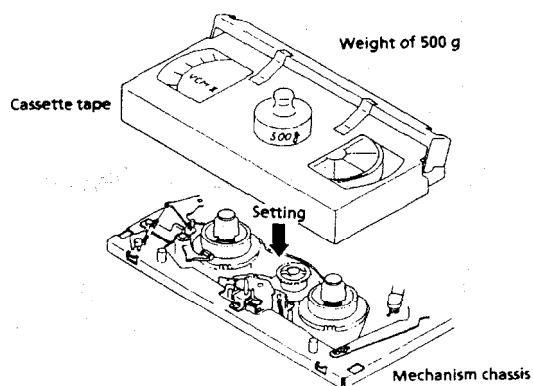
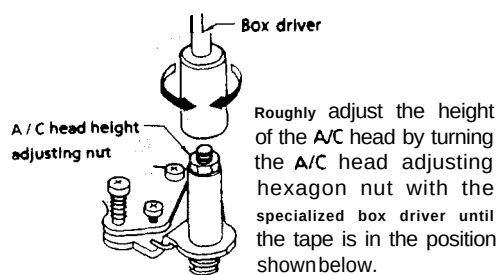


Figure 1-50.

HEIGHT ADJUSTMENT OF RETAINING GUIDE AND REVERSE GUIDE

Note :

Before the rough adjustment of the tape drive train, check that the retaining guide height is within the value in Figure 1-51 by using the special jigs.

[Height adjustment of retaining guide]

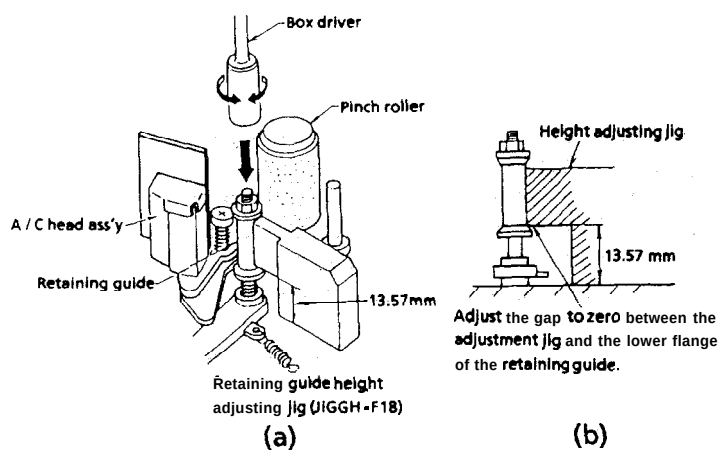
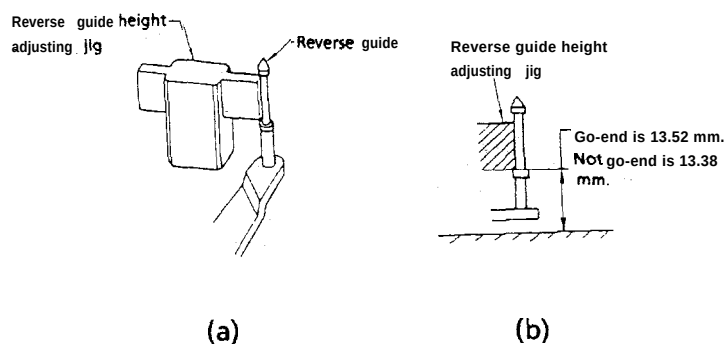


Figure 1-51.

[Height adjustment of reverse guide]



To readjust the height, remove the cut washer from behind, take out the spring, lift the reverse guide and add a washer.

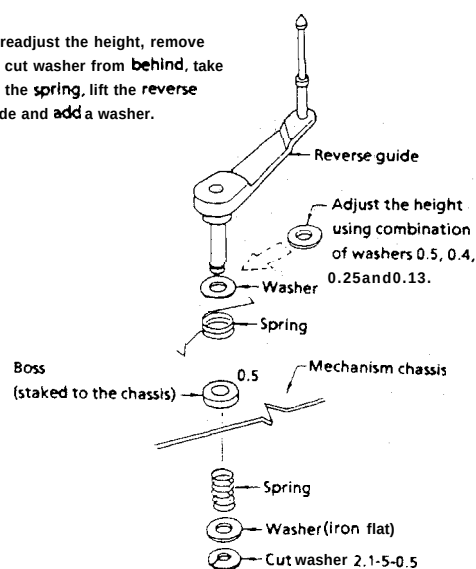


Figure 1-52.

ADJUSTMENT OF TAPE DRIVE TRAIN

1. Remove the cassette housing control assembly.
2. Check and adjust the position of the tension pole. (See page 2 1.)
3. Check and adjust the video search rewind back tension. (See page 20.)
4. Set the tilt angle of the A/C head. (See page 24.)
5. Rough adjustment of tape drive train.
 - a) Connect the oscilloscope to the test point for PB CHROMA envelope output (TP501). Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching pulse (TP502).
 - b) Loosen the setscrew at the lower part of the guide roller, and adjust it with an adjusting screw driver (JIGDRIVERH-4) so that the guide roller turns smoothly. (Do not **overloosen** the setscrew, which causes insecurity of the guide roller.) (See Figure I-53.)
 - c) **Set** the alignment tape (See the Notes below) on the reel disk, and place the unit in the playback mode.
(Place a 500 g. weight on the cassette tape to prevent floating of the cassette tape.)

Notes :

- 1 Alignment tape.

2 Head Type—	VROCPSV (PAL)
	VROATSV (NTSC)

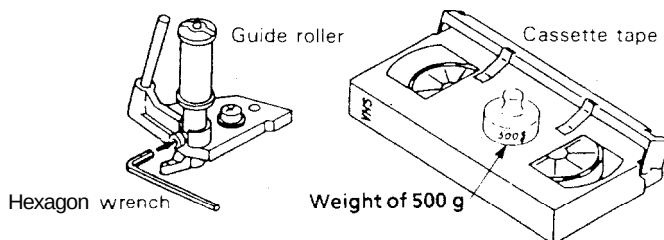


Figure I-53.

Figure I-54.

- d) **Change** the envelope waveform from MAX to MIN, and MIN to MAX by pushing the (+) or (-) tracking button, and check a flat response is obtained on the waveform.
- e) If a flat response cannot be obtained, roughly adjust the guide rollers on the supply side and take-up side using an adjusting screw driver until a flat response can be obtained.
- f) Turn the A/C head tilt adjusting screw with a screwdriver to prevent the tape from wrinkling at the upper and lower flanges of the fixed guide.
 - 1) Wrinkles at the upper flange : Turn the above adjusting screw clockwise, as shown in Fig. 1 - 55 (a)
 - 2) Wrinkles at the lower flange : Turn the above adjusting screw counterclockwise, as shown in Fig. 1 - 55 (b)

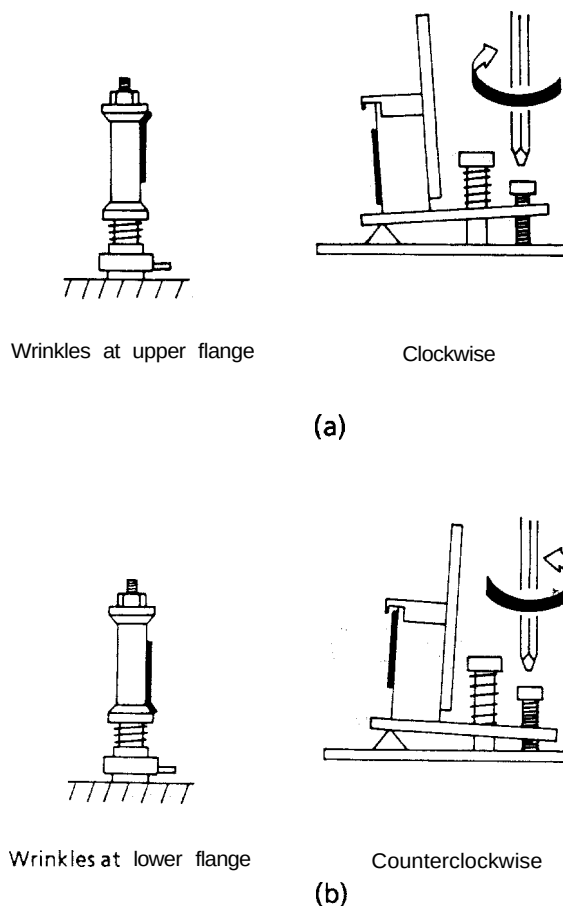


Figure I-55.

Notes:

1. Place the tracking control in the center position, and adjust the X-position adjusting nut so that the PB CHROMA envelop becomes maximum for easier rough adjustment of the tape drive train.
2. In the rough adjustment, pay particular attention to the outlet side.

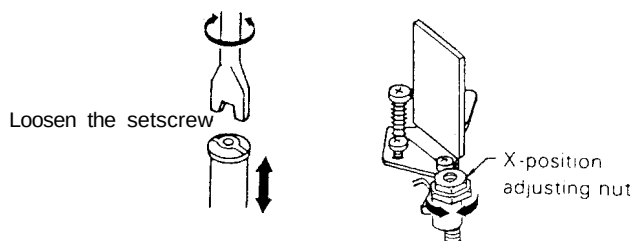


Figure I-56.

Figure I-57.

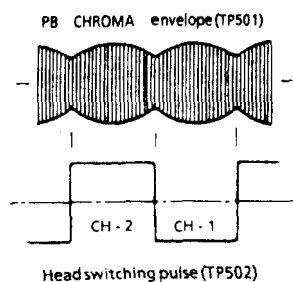


Figure I-58.

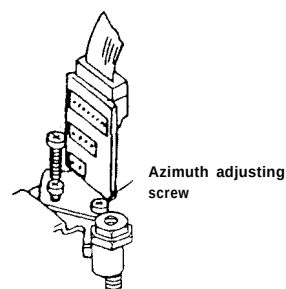


Figure I-59.

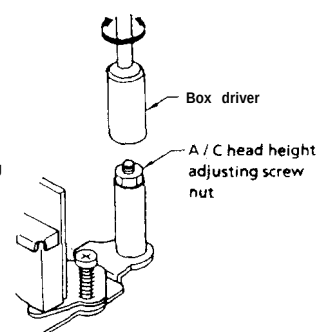


Figure 1-60.

6. Adjustment of A/C head height and azimuth

- Connect an oscilloscope to the audio output terminal.
- Use the alignment tape and play back its audio 6 kHz signal (monoscope pattern for video signal). Adjust the azimuth adjusting screw to obtain the maximum audio output on an oscilloscope. (See Figure I-59.)
- Use the alignment tape and play back its audio 1 kHz signal (colour bar for video signal) and slowly rotate the A/C head height adjusting nut with the special box driver to obtain the maximum audio output.
- Perform the adjustment in b) again.
- After this adjustment, apply glyptal to the screws and nuts to fix them.

7. Adjustment of tape drive train and X-Position.

- Connect the oscilloscope to the test points (TP501) for PB CHROMA envelope output. Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching pulse (TP502).
- Play back the tape drive train alignment tape.
- Push the (+) or (-) button to change the envelope waveform from MAX to MIN, and MIN to MAX. Adjust the guide roller's height on the supply and take-up sides with an adjusting screw driver, to obtain an envelop waveform that is as flat as possible.
- If the tape is above or below the helical lead, the PB CHROMA waveform will take the shape shown in Figure 1-61.
- Adjust for maximum flatness of the envelope as the step 5, e) in page 26.

	When the tape is above the helical lead.		When the tape is below the helical lead.	
	Supply side	Take-up side	Supply side	Take-up side
Adjustment	Supply side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope	Take-up side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope.	Supply side guide roller rotated in counterclockwise direction (raises guide roller) to make the tape float above the helical lead. The supply side guide roller is then rotated in the clockwise direction to flatten the envelope.	Take-up side guide roller rotated in counterclockwise direction (raises guide roller) to make the tape float above the helical lead. The take-up side guide roller is then rotated in the clockwise direction to flatten the envelope.

Figure 1-61.

- f) Push the (+) or (-) tracking button to check that a flat response is obtained on the envelope waveform.
 - g) Secure the guide roller by tightening the guide roller setscrew in the unloading mode.
 - h) Play back the tape drive train alignment tape to check that the envelope waveform does not change.
8. Adjustment of A/C head X-position.
- a) Push the (+) and (-) tracking buttons at the same time to the preset mode.
 - b) Rotate the X-position adjusting nut with an adjusting box driver, and adjust the A/C head position for maximum head switching pulse low side envelope.
 - c) Adjust the playback switching point.
 - d) Check the flatness of the envelope waveform and sound by playing back a recorded tape.

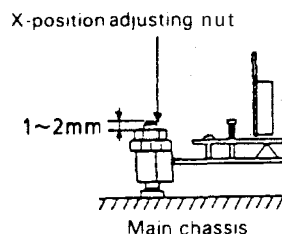


Figure I-62.

REPLACEMENT OF THE CAPSTAN D.D. (DIRECT DRIVE) MOTOR

- Remove the cassette housing control assembly.
- Removal (Follow the order of indicated numbers.)

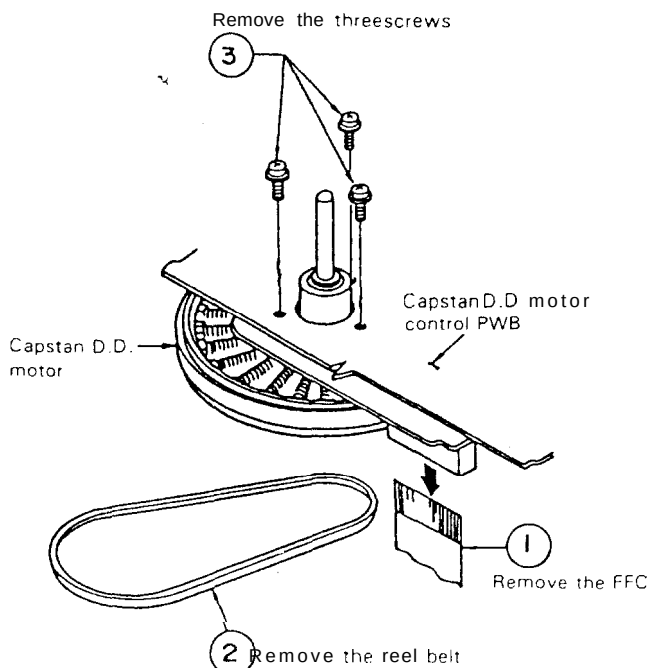


Figure 1-63

• Reassembly

1. Mount the capstan motor on the mechanism chassis making sure not to allow the capstan shaft to hit the mechanism chassis, and attach it with the three screws.
2. Insert the FFC into the capstan D.D. motor control PWB.
3. Attach the reel belt.

Notes :

1. After installing the capstan D.D. motor, be sure to rotate the capstan D.D. motor and check the movement.
2. Check and adjust the servo circuit.

REMOVAL AND REASSEMBLY OF THE LOADING GEAR BLOCK

Notes : The following explanation is based on 4-head models. (The slow brake spring and slow brake lever are not provide on 2-head models.)

1. Remove the cassette housing control assembly.
2. Remove the reel belt.
3. Remove the reel block.

• Removal

Notes :

1. Use care not to deform the parts hooked to the slow brake shaft cap, take-up loading gear, and supply loading gear as shown in Figure I-64.

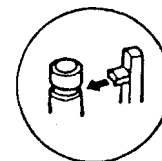


Figure I-64.

2. In removing the loading gear, secure the guide roller with a rubber band or the like beforehand for easier reassembly.

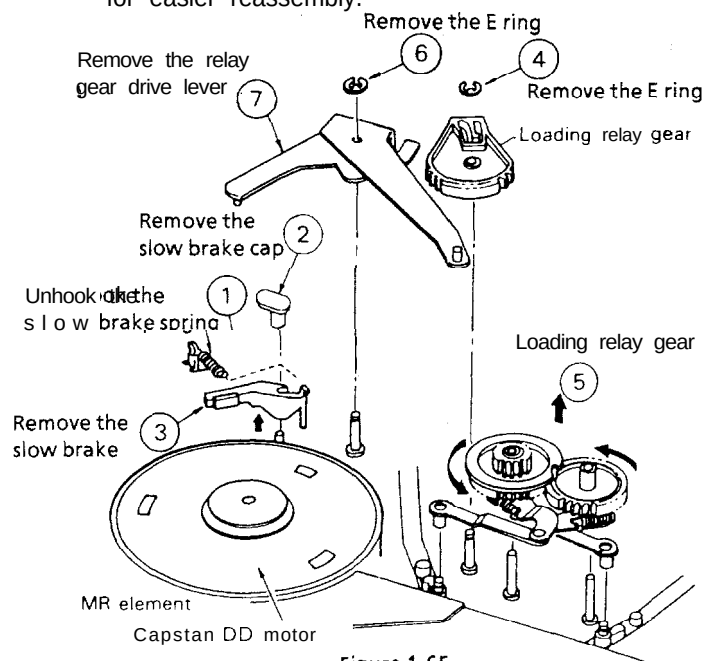


Figure 1-65.

1. Remove the slow brake spring ①.
2. Remove the slow brake shaft cap ②.
3. Remove the slow brake lever ③.
4. Remove the E ring ④.
5. Rotate the take-up loading gear, take-up loading arm assembly, supply loading gear and supply loading arm assembly slightly in the loading direction, and take them ⑤ all out.
6. Remove the E ring ⑥.
7. Remove the relay gear drive lever ⑦.

- Reassembly
Reverse the procedure. Be sure to match the tally marks on the gears.

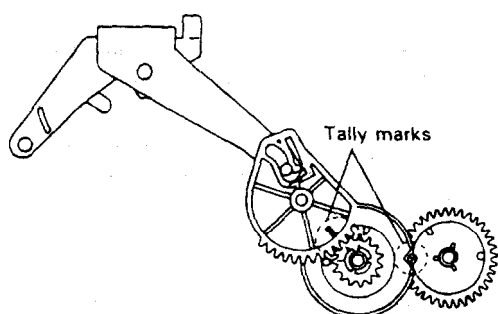


Figure I-66.

Notes :

1. When reassembling, apply specified grease to the following points; all the gear teeth, all the gear shafts and the cam groove of loading relay gear.
2. Be careful not to deform the supply/take-up loading arms.
3. Be careful to keep clean the slow brake lever felt.
4. Be also careful to keep the outer surface of the capstan D.D. motor free from dust and dirt. (If stained, the MR (Magnet Resistor) element might be damaged.)
5. Take care not to deform the anti-fall hooks of the slow brake shaft cap and supply/take-up loading gears more than required.

REMOVAL AND REASSEMBLY OF LOADING BLOCK

● Removal

1. Remove the leads ①.
2. Remove the cassette loading belt ②.
3. Unscrew the three screws ③.
4. Pull the loading block upward.

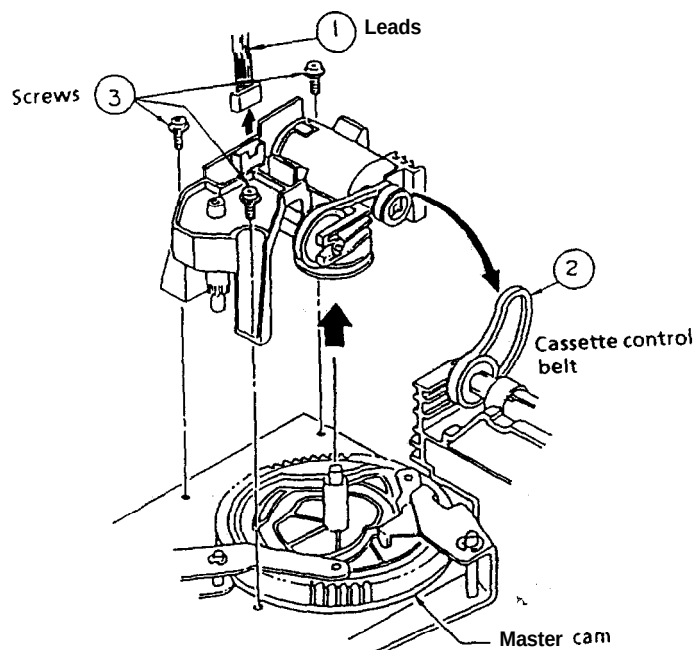


Figure I-67.

Note :

When using a magnetic screw driver in removal of three screws, do not allow the magnetic driver to hit the A/C head or drums.

● Reassembly

1. Turn the master cam all the way counter-clockwise.
2. Match the tally mark on the cam switch with the mating mark. Fit the loading block and the master cam with each other. Tighten up the three screws.

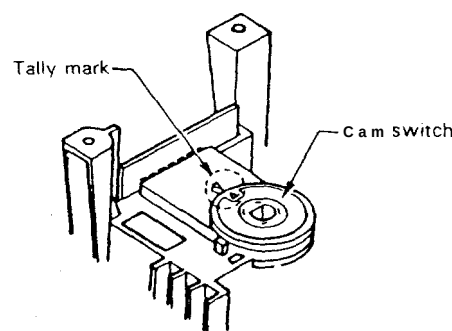


Figure I-68.

3. Finally connect the leads and apply the cassette loading belt.

Notes:

1. Be careful not to scratch the gear.
2. Be careful not to stain the belt. If dirty, clean it up with the specified cleaning liquid.

REPLACEMENT OF LOADING MOTOR

1. Set the cassette ejected condition by placing the unit in the cassette eject mode.
2. Unplug the power cord.
3. Remove the loading block in accordance with the statements and drawings above.

● Removal

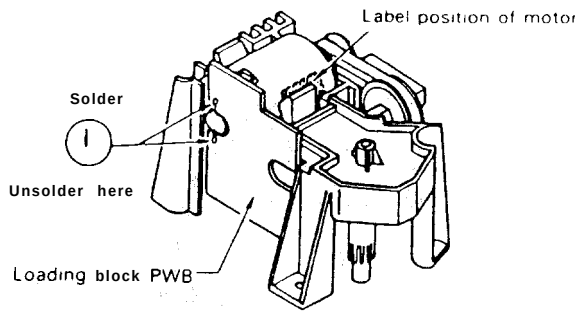


Figure I-69.

1. Unsolder the leads ① from the loading motor.
2. Unlock the left and right catches ② of the cam switch off the loading block. Take out the cam switch and loading block PWB (See Figure 1-70).

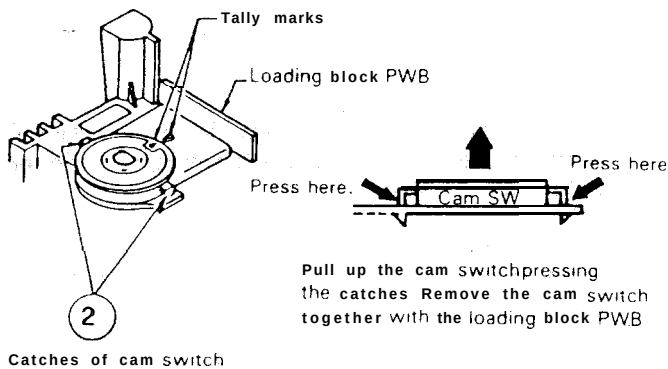


Figure 1-70.

3. Take out the loading belt ③.
4. Pry up the back end of the loading motor with a screw driver or the like as in Figure 1-71 and take out the motor.

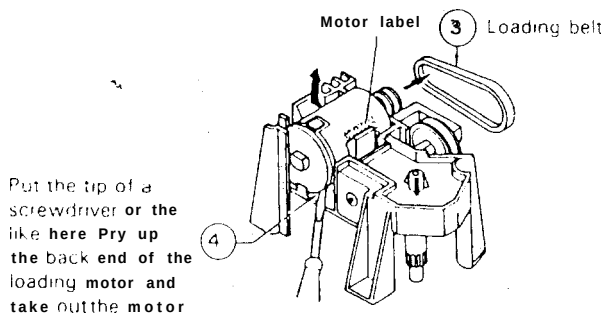


Figure 1-71.

● Reassembly

1. Remove the loading motor, and mount a new loading motor as in Figure I-72.
2. Place the loading motor so that its label is visible as shown in Figure I-72. Make sure that the screw hole at the motor shaft, protuberance on the loading block, and the motor's back end marked with the arrow are mated with each other.

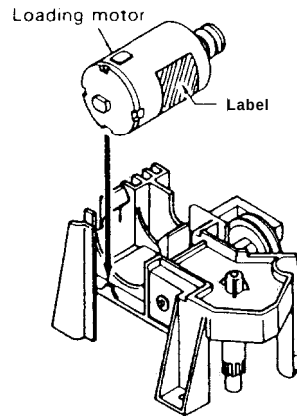
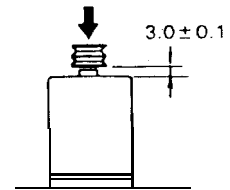


Figure I-72.



Note:
When press-fitting the loading motor pulley, keep the pressure less than 5 kg, and the gap between the motor and pulley should be 3.0 ± 0.1 mm.

Figure I-73.

3. Set the loading block PWB and the cam switch in position.
4. Resolder the leads to the loading motor.
5. Finally place the loading block (See page 29).
6. Attach the loading belt.

REPLACEMENT OF MASTER CAM

● Removal

1. Remove the E ring ①.
2. Remove the half-loading drive lever ②.
3. Remove the E ring ③.
4. Remove the pinch roller lever ④.
5. Pull out the master cam upward ⑤.

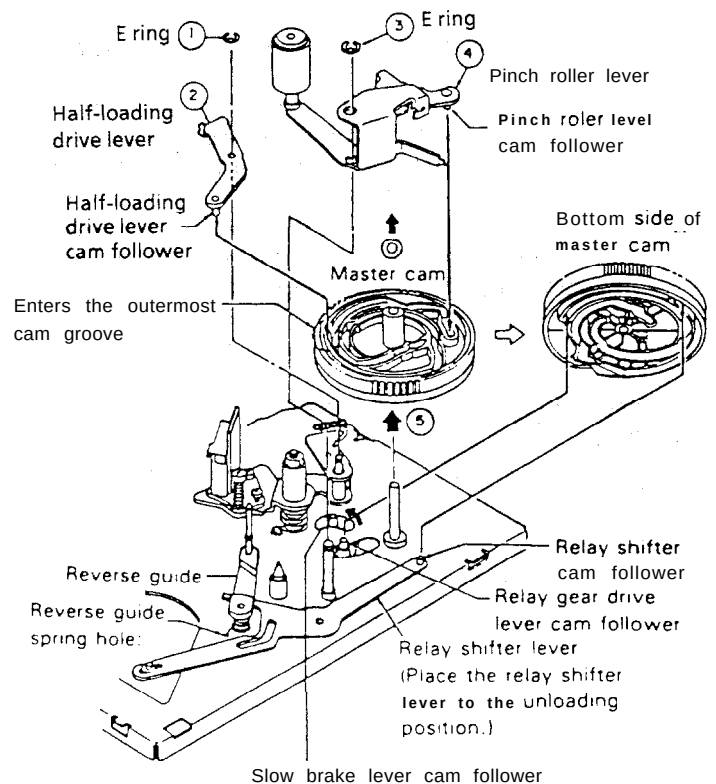


Figure 1-74

- Reassembly

1. Place the relay gear drive lever in the unloading state.
2. Place the relay shifter so that it is in contact with the reverse guide spring hole in the mechanism chassis. Release the slow brake lever with a finger to bring it away from the capstan (in the direction of arrow). Then place the master cam so that the **D** cut-off part of the master cam faces the direction of arrow.
3. Place the half-loading reciprocating lever's cam follower so that it fits in the master cam's circumferential cam groove (marked with arrow), attach the **E** ring, then mount the half-loading reciprocating lever.
4. Turn the master cam somewhat clockwise until the pinch roller lever's cam follower goes into the master cam's groove (marked with arrow). Mount the pinch roller lever and then attach the **E** ring.
5. Rotate the master cam by hand to make sure all the four levers (relay gear drive lever, half-loading reciprocating lever, pinch roller lever, and relay shifter lever) are in the cam grooves in place.
6. Mount the loading block. (See page 29.)

Notes :

1. Be careful not to scratch the teeth and grooves of the master cam.
2. After installation of the master cam, be sure to rotate the master cam by hand before installing the loading block. If the levers are in wrong position, the master cam and the levers may get damaged when the motor starts.
3. Apply specified grease to the master cam's grooves and teeth.

REPLACEMENT OF UPPER DRUM

Note :

The gap between the lower drum and the upper drum is very accurate, in the order of microns, and care should be paid to their replacement. Even a slight amount of foreign material will affect the accuracy of their reassembly.

- Replacement (Follow the order of the indicated numbers.)

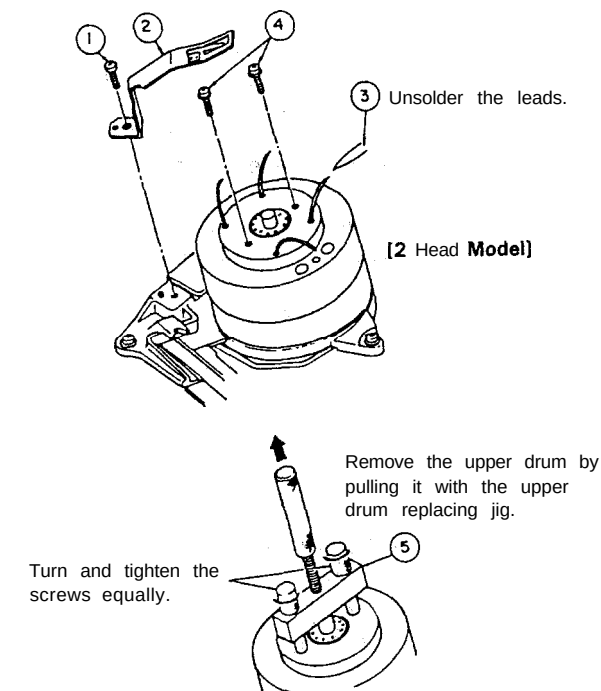


Figure I-75.

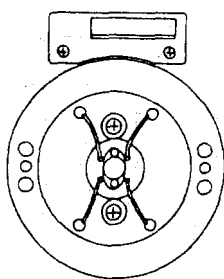
Notes :

1. Avoid touching the drum surface with bare hands.
2. Pull out the upper drum with care so that it may not be tilted, and replace it with the upper drum replacing jig using care not to damage the disk circumference.
3. Do not hit the screws when tightening them.

• Reassembly

Notes :

1. Before setting the drum, check that there are no scratches or dust on the edge of the surface and circumference of the disk.
2. Before setting the drum, check that there are no scratches or dust on the internal surface and edge of the surface of the upper drum.
3. On assembling these parts, insert the upper drum onto the disk with care, so that the upper drum is not tilted.
4. When assembling these parts, do not allow dust or dirt come between the disk and the upper drum.
5. Do not use excessive force when driving in the screws.



[2 Head Model]

Figure I-76.

1. Set the new drum.
2. Fasten the upper drum in place with the two screws.
3. Solder the leads.
Note: Soldering should be performed quickly and carefully without touching adjacent patterns.
4. After replacement, be sure to check the tape drive train adjustment (see page 26.) and the following electric adjustments.
 - Adjustment of the playback switching point.
 - Checking and adjustment of the X-position

REPLACEMENT OF D.D. MOTOR

1. Put the unit in the cassette eject position.
2. Unplug the power cord.

• Removal (Reverse the order in reassembly.)

1. Remove the FFC ①.
2. Remove the two D.D. rotor assembly setscrews ②.
3. Pull out the D.D. rotor ③.
4. Remove the three D.D. stator setscrews ④.
5. Remove the D.D. stator assembly ⑤.

Notes :

1. When removing the D.D. rotor assembly or D.D. stator assembly, use care not to hit the loading relay gear.
2. Secure the D.D. rotor assembly so that the installation positioning holes in the D.D. rotor assembly and lower drum assembly match.
3. Be careful not to damage the upper drum or the video head.
4. Be sure that the hall device and the D.D. stator assembly are not damaged by the D.D. rotor assembly or other parts.
5. After installation, adjust the playback switching point.

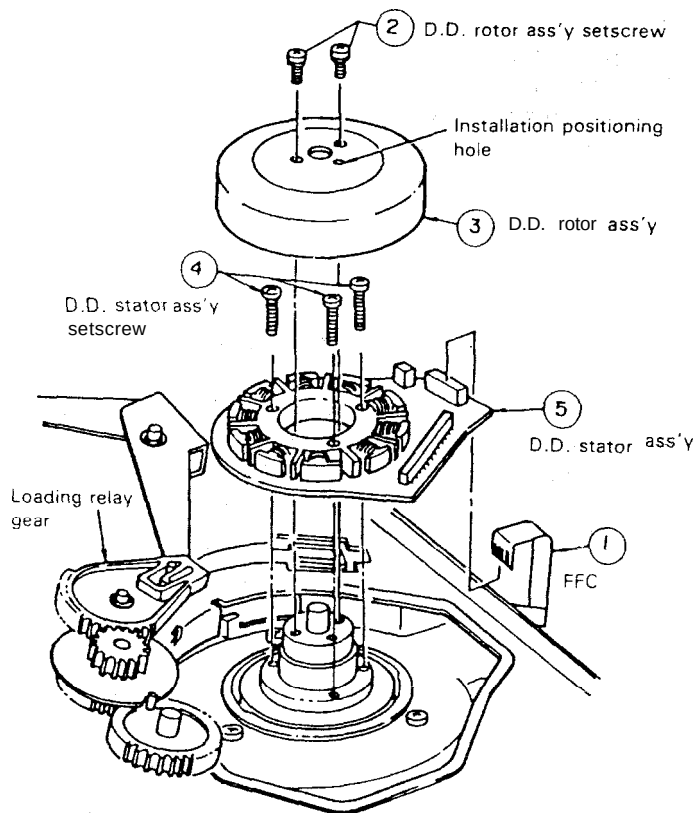


Figure 1-77.

REPLACING THE AHC (AUTOMATIC HEAD CLEANER)

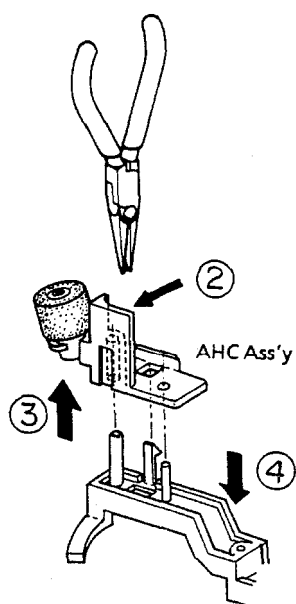
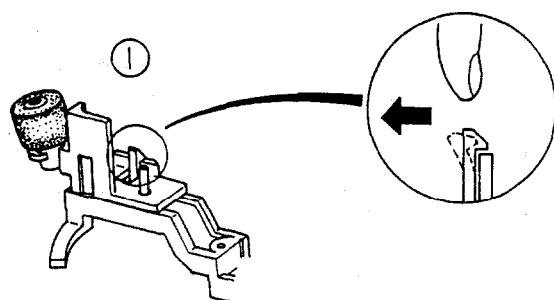


Figure 1-78.

● Removal

1. Unhook part ① with a finger in the direction of arrow.

Hold the rib (marked with an arrow) of the AHC ass'y ② with electrician's pliers or the like, and pull the ass'y upward in the direction of arrow ③.

Note:

To pull out the AHC ass'y, hold the AHC lever down.

● Reassembly

1. Push down the AHC ass'y in the direction of arrow ④. Make sure that the ass'y is secured in position by the hook of part ①.

Notes:

1. Be careful to keep the AHC ass'y out of contact with the drum.
2. Be careful to keep the cleaner section of the ass'y free of grease or contaminants.

ADJUSTMENT OF THE VCR ELECTRICAL CIRCUITRY

Prior to the adjustment:

In most cases, necessity for electrical circuits will arise from replacement of mechanical parts including the video head. Before starting adjustment of electrical circuits, check that mechanical operation of the equipment is complete (the mechanism are adjusted completely).

If the equipment fails electrically, locate a defect or defects first of all using instruments. Then repair or replace parts and make adjustment by the procedures described below.

When required instruments are not available, do not move controls indiscriminately.

● Instruments

- VTVM
- DC regulated power supply
- Oscilloscope
- Audio generator
- Colour bar generator
- Alignment tape
- Frequency counter
- Blank video tape (VHS)

ADJUSTMENT OF POWER CIRCUIT

- Test points layout

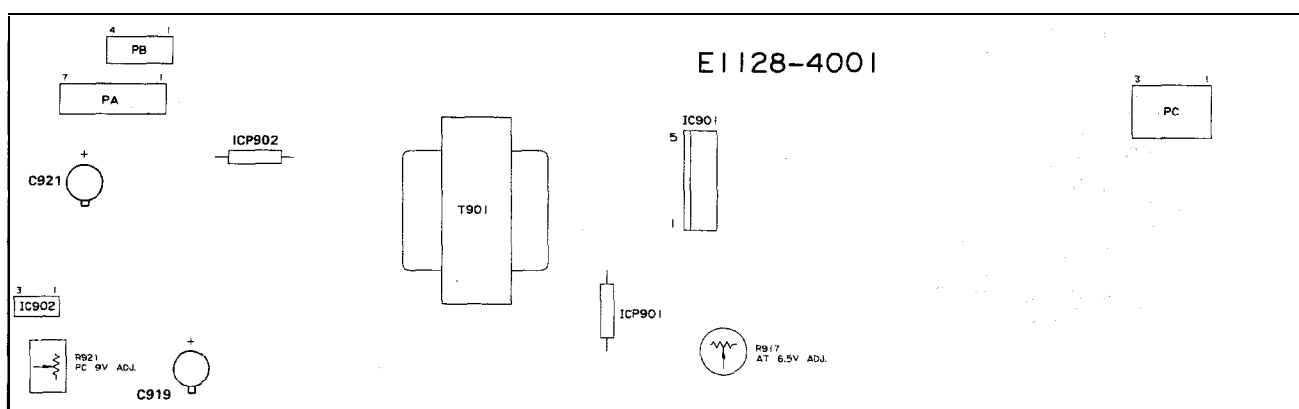


Figure 2-0.

■ ADJUSTMENT OF POWER CIRCUIT

Adjustment of power circuit (AT6.5V)

Measuring instrument	DC voltmeter
Mode	E-E
Test point	C921 ⊕ LEAD
Control	R917
Specification	8.5V ± 0.2

- (1) Connect a voltmeter to C921 ⊕ (pin 4 of connector PA) and ground.
- (2) Adjust R917 so that the voltmeter reads 8.5V.

Adjustment of power circuit (9V)

Measuring instrument	DC voltmeter
Mode	E-E
Test point	C919 ⊕ LEAD
Control	R921
Specification	9.4V ± 0.1

- (1) Connect a voltmeter to C919 ⊕ (pin 1 of connector PA) and ground.
- (2) Adjust R921 so that the voltmeter reads 9.4V.

ADJUSTMENT OF SYSTEM CONTRASERVO CIRCUIT

- Test points layout

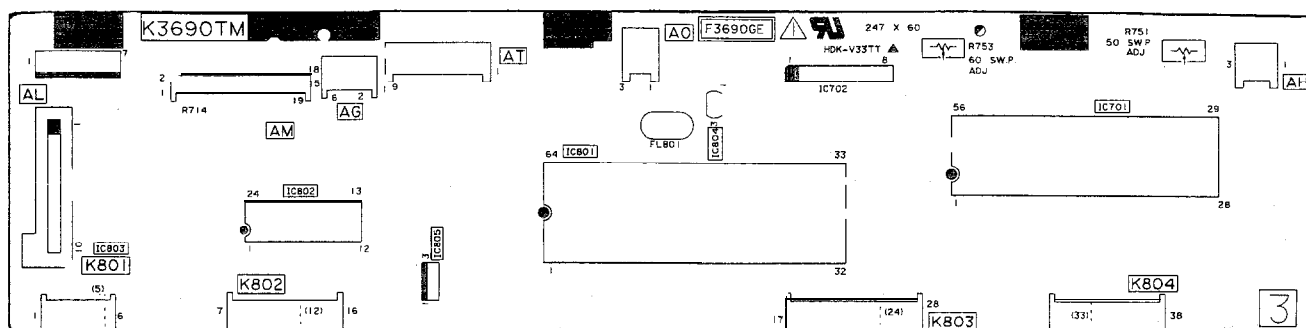


Figure 2-1. SYSTEM CONTRASERVO PWB

■ ADJUSTMENT OF SERVO CIRCUIT

Adjustment of PAL System playback switching point

Measuring instrument	Oscilloscope
Mode	Playback (tracking at center)
Tape used	Alignment tape(VROCPSV)
Test point	CH-1; TP502 CH-2; Pin ⑨ of IC201 (video output). (CH-1 trigger slope switch at (+), internal trigger at CH-1 side)
Control	R751 (50Hz SW. P. ADJ.)
Specification	$6.5 \pm 0.5H$

1. Insert the PAL system alignment tape (VROCPSV) and put the unit in the playback mode.
2. Press both tracking control button at the same time to set the tracking in center.
3. Adjust R751(50Hz SW. P. ADJ.) so that the waveform on the oscilloscope screen be as shown in Figure 2-2.

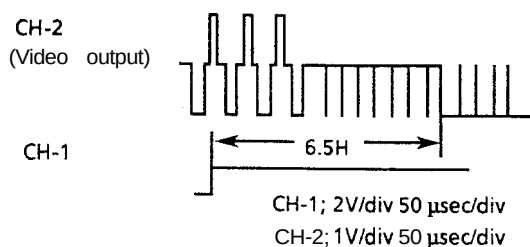


Figure 2-2.

Adjustment of NTSC System **playback** switching point

Measuring instrument	Oscilloscope
Mode	Playback (tracking at center)
Tape used	Alignment tape(VROATSV)
Test point	CH-1 ; TP502 CH-2; Pin ⑨ of IC201 (video output). (CH-1 trigger slope switch at (+), Internal trigger at CH-1 side)
Control	R753 (60Hz SW. P. ADJ.)
Specification	$6.5 \pm 0.5H$

1. Insert the NTSC system alignment tape (VROATSV) and put the unit in the playback mode.
2. Press both tracking control button at the same time to set the tracking in center.
3. Adjust R753 (60Hz SW. P. ADJ.) so that the waveform on the oscilloscope screen be as shown in Figure 2-3.

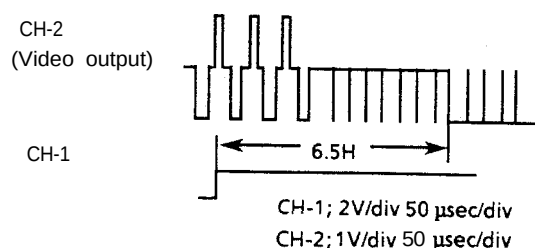


Figure 2-3.

Adjustment of PAL System slow tracking

Measuring instrument	Monitor TV
Mode	Recording and playback on self -recording tape.
Input signal	Commercial broadcast or video signal.
Test point	Monitor screen
Adjusting point	Tracking control button (+),(-)
Specification	No noise bar on the monitor TV screen.

1. Play back the self-recorded tape in the PAL System slow mode.
2. Make the resistor R1058 and R1060 **short**-circuited with diode in the timer PWB. (Cathode of the diode is in R1060 side)
3. Be sure that the PB mode display (▶) disappears **on the** screen.
4. Remove the short-circuit.
5. Adjust the tracking control using the TRACKING button on the main unit or the remote controller so that there is no noise on the screen.

Adjustment of NTSC System slow tracking

Measuring instrument	Monitor TV
Mode	Recording and playback on self -recording tape.
Input signal	Commercial broadcast or video signal.
Test point	Monitor screen
Adjusting point	Tracking control button (+),(-)
Specification	No noise bar on the monitor TV screen.

1. Play back the self-recorded tape in the NTSC System slow mode.
2. Make the resistor R1058 and R1060 **short**-circuited with diode in the timer PWB. (Cathode of the diode is in R1060 side)
3. Be sure that the PB mode display (▶) disappears on the screen.
4. Remove the short-circuit.
5. Adjust the tracking control using the TRACKING button on the main unit or the remote controller so that there is no noise on the screen.

Adjustment of PAL System still picture vertical sync

Measuring instrument	Monitor TV
Mode	Still picture playback
Input signal	Self-recording tape
Test point	Monitor screen
Adjusting point	Tracking control button (+),(-)
Specification	No noise jitter

1. Play back the self-recorded tape in the PAL System still mode.
2. Using the TRACKING button on the main unit or the **remote** controller, make adjustment so that jitter becomes minimum.
3. Now press the STOP button to stop the tape.

Adjustment of NTSC System still picture **vertical** sync

Measuring instrument	Monitor TV
Mode	Still picture playback
Input signal	Self-recording tape
Test point	Monitor screen
Adjusting point	Tracking control button (+),(-)
Specification	No noise jitter

1. Play back the self-recorded tape in the NTSC System still mode.
2. Using the TRACKING button on the main unit or the **remote** controller, make adjustment so that jitter becomes minimum.
3. Now press the STOP button to stop the tape.

Adjustment of FM 3.8 MHz and 4.8 MHz

Measuring instrument	Frequency counter	Oscilloscope
Mode	Recording	Self-recording/ playback
Input signal	External input (no signal)	Standard colour bar (stair-case waveform)
Test point	TP205 (Signal) TP202 (Ground)	Video output pin ⑨ of IC201
Adjusting point	R227 (FM carrier control)	R228 (Deviation control)
Specification	3.8 MHz ± 50 kHz	2.0 ± 0.08 Vp-p

Note :

Carry out this adjustment only when IC201 has been replaced or when the carrier setting (3.8 MHz) or the deviation (4.8 MHz) is found apparently out of specification.

Make this adjustment after the EE level has been completely adjusted.

1. First make sure that the EE video signal level is at the specified level.
2. Place the unit in the record mode and get it ready for external input.

Note :

Do not connect anything to the external input terminal.

3. Hook up the frequency counter to TP205 and TP202. Adjust R227 (FM carrier control) so that the counter reading be 3.8 MHz.

Note :

Make sure the white clip control is not now applied to the waveform.

4. Feed the colour bar signal and make self-recording and playback.
5. Observe the voltage of pin ⑨ of IC201 (video output) on the oscilloscope screen. If the playback video signal level is above 2.0 Vp-p, turn R228 (deviation control) clockwise. If below 2.0 Vp-p, turn the control counter-clockwise. Now make self-recording and playback again.
6. Repeat the above step 5 to finally get the playback video signal level at 2.0 ± 0.08 Vp-p, as shown in Figure 2-7.

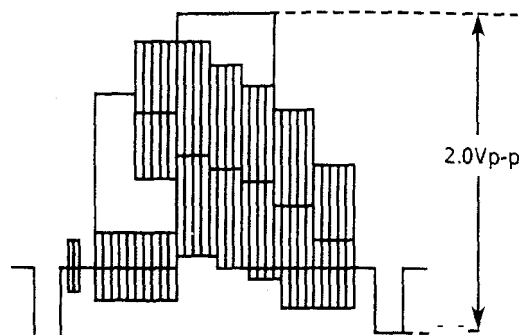


Figure 2-7.

Adjustment of recording current

Measuring instrument	Oscilloscope	
Mode	Recording	
Input signal	Standard colour bar (stair-case waveform)	
Test point	TP301 (GND at TP302) External trigger (video output terminal)	
Adjusting point	R255 (recording FM control)	R518 (recording chroma control)
Specification	Sync tip level: 140 ± 10 mVp-p	Red level: 24 ± 2 mVp-p

Note:

TP301 and TP302 are located on the head amp PWB.

1. Place the unit to the record mode.
2. Feed the colour bar signal to the video input terminal.
3. Observing the waveform on the oscilloscope screen (external trigger at pin ⑨ of IC201 (video output)), take the following steps.
 - a) Connect the oscilloscope's ground and signal leads to TP302 and TP301, respectively.
 - b) Turn R255 (recording FM control) to minimum.
 - c) Adjust R518 (recording chroma control) so that the red level be 24 ± 2 mVp-p as shown in Figure 2-9.
4. Adjust R255 (recording FM control) so that the sync tip be 140 ± 10 mVp-p as shown in Figure 2-10.

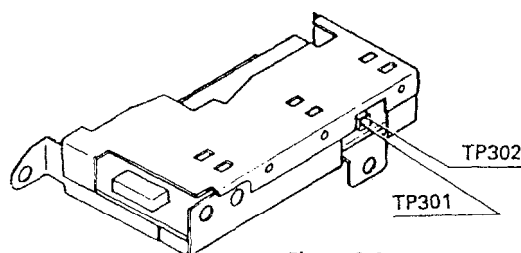


Figure 2-8.

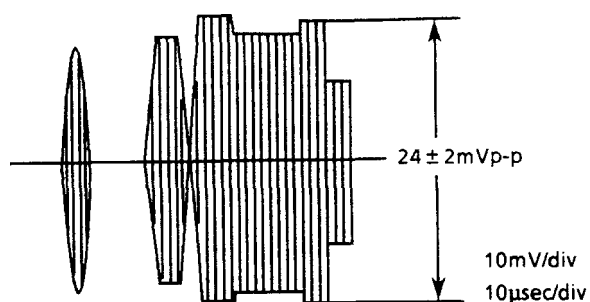


Figure 2-9.

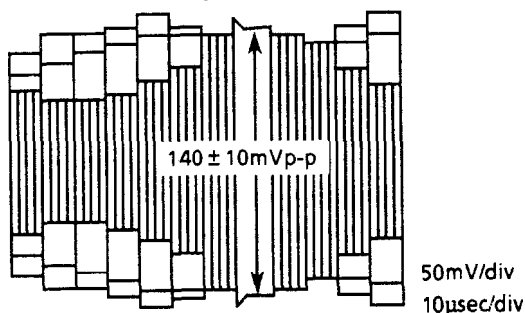


Figure 2-10.

■ ADJUSTMENT OF Y/C PLAYBACK CIRCUIT

Adjustment of **playback** video signal level

Measuring instrument	Oscilloscope
Mode	Playback
Tape used	Alignment tape (VROCPSV) (stair-case waveform)
Test point	Pin ⑨ of IC201 (video output)
Adjusting point	R209 (playback level control)
Specification	$2.0 \pm 0.1\text{Vp-p}$ (not terminated)

1. Insert the alignment tape and place the unit to the playback mode.
2. Hook up the oscilloscope to pin ⑨ of IC201 (video output). Adjust R209 (playback level control) so that the on-screen waveform be $2.0 \pm 0.1\text{Vp-p}$ as shown in Figure 2-11.

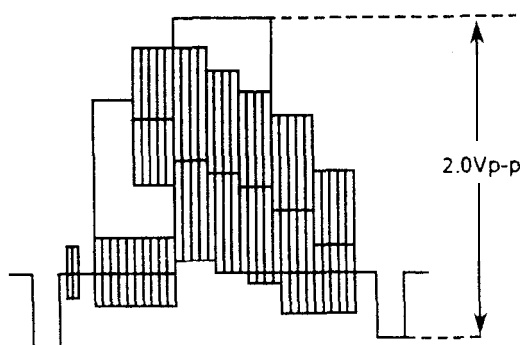


Figure 2-11.

Adjustment of delay level

Measuring instrument	Dual-beam oscilloscope
Mode	Playback
Tape used	Alignment tape (VROCPSV) (stair-case waveform))
Test point	CH-1; TP203 CH-2; TP206
Adjusting point	R240 (delay level control)
Specification	CH-2 level = CH-1 level

1. Insert the alignment tape and play it.
2. Adjust R240 (delay level control) so that the levels of CH-1 and CH-2 are the same as shown in Figure 2-12.

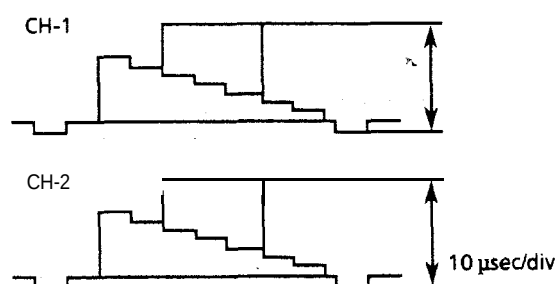


Figure 2-12.

Adjustment of the APC (PAL)

Measuring instrument	Frequency counter
Mode	Playback
Tape used	Alignment tape (VROCPSV) (stair-case waveform)
Test point	TP504
Adjusting point	C514 (APC control)
Specification	$4.433619\text{MHz} \pm 20\text{Hz}$

1. Insert the alignment tape and place the unit to the playback mode.
2. Connect the frequency counter to TP504. Adjust C514 (APC control) so that the counter reading be $4.433619\text{MHz} \pm 20\text{Hz}$.

Adjustment of the APC (NTSC)

Measuring instrument	Frequency counter
Mode	Playback
Tape used	Alignment tape (VROATSV) (stair-case waveform)
Test point	TP504
Adjusting point	C518 (APC control)
Specification	3.579545MHz $\pm$ 20Hz

1. Insert the alignment tape and place the unit to the playback mode.
2. Connect the frequency counter to TP504. Adjust C518 (APC control) so that the counter reading be 3.579545MHz $\pm$ 20Hz.

■ ADJUSTMENT OF AUDIO CIRCUIT

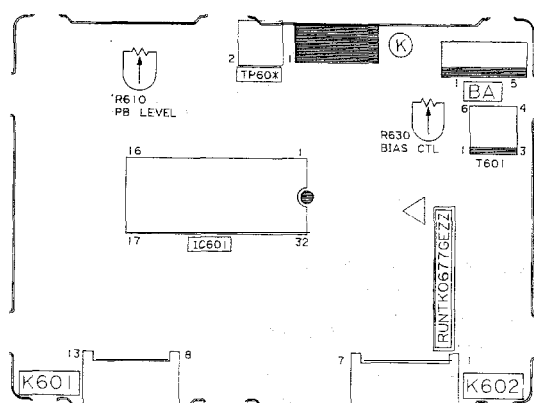


Figure 2-13. AUDIO PWB

Adjustment of playback level

Measuring instrument	VTVM
Mode	Playback
Input signal	Alignment tape (VROATSV) (1-kHz level control signal)
Test point	Audio output signal
Adjusting point	R610 (playback level control)
Specification	-9 $\pm$ 1 dBs

1. Play back the alignment tape (1-kHz level control signal).
2. Hook up the VTVM to the audio output terminal.
3. Adjust R610 (playback level control) so that the output level be -9 $\pm$ 1 dBs.

Checking of erase voltage and oscillation frequency

Measuring instrument	Oscilloscope
Mode	Recording
Input signal	_____
Test point	Both ends of the full-erase head
Adjusting point	_____
Specification	Erase voltage; Over 40 Vp-p Oscillation frequency; 70 $\pm$ 5 kHz

1. Place the unit to the record mode.
2. Hook up the oscilloscope to both ends of the full-erase head.
3. Make sure the erase voltage is over 40 Vp-p.
4. Be sure that the oscillation frequency is 70 $\pm$ 5kHz.

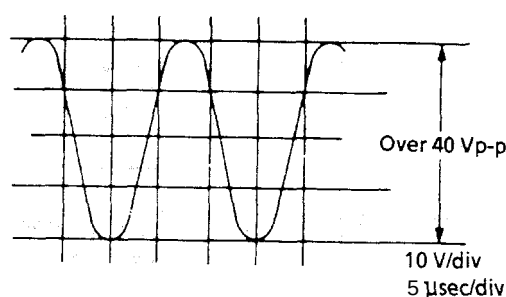


Figure 2-14.

Adjustment of bias current

Measuring instrument	VTVM
Mode	Recording
Input signal	_____
Test point	TP601 (SIG), TP602 (GND)
Adjusting point	R630 (bias current control)
Specification	260 $\pm$ 10 μ A (2.6mV $\pm$ 0.1 mV)

1. Place the unit to the record mode.
2. Connect the VTVM to TP601 (SIG) and TP602 (GND).
3. Adjust R630 (bias current control) so that the bias current be 260 $\pm$ 10 μ A (2.6 $\pm$ 0.1 mV).

Checking of recording level

Measuring instrument	VTVM
Mode	Self-recording/playback
Input signal	1 kHz / -8 dBs
Test point	Audio output terminal
Control	
Specification	- 8 ± 3 dBs

1. Feed 1 kHz, -8 dBs signal to the audio input terminal. Make self-recording and playback of the signal.
2. Make sure the output at the audio output terminal is - 8 ± 3 dBs.
3. If out of spec, readjust the playback level and the bias current.

■ ADJUSTMENT OF THE IF CIRCUIT

Adjustment of the RF AGC

Measuring instrument	Oscilloscope Signal generator
Mode	EE
Input signal	Colour bar signal
Test point	Pin ⑫ of IF Pack (GND) Pin ② of IF Pack (Video Output)
Adjusting point	VR001(AGC control)

1. Receive the colour bar signal (input field strength: 80 dBμ).
2. Observe the video output terminal waveform on the oscilloscope. Adjust VR001(AGC control) in the IF pack until the noise disappears from the oscilloscope screen and the waveform nearly comes into sync.

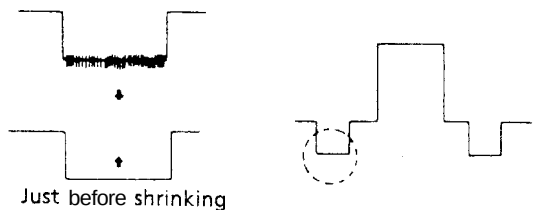
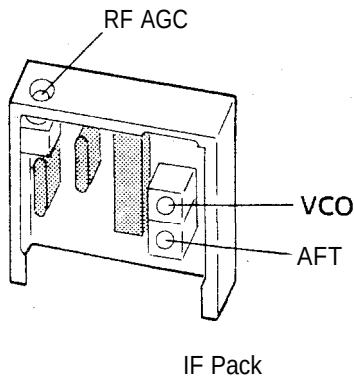


Figure 2-15.

Adjustment of the AFT

Measuring instrument	Oscilloscope Signal generator
Mode	EE
Input signal	PIF frequency uniwave Colour bar signal (70 dBμ)
Test point	Pin ⑫ of IF Pack (GND) Pin ② of IF Pack (Video Output)
Adjusting point	TOO2 (AFT coil)
Specification	

1. Receive the colour bar signal (input field strength: 70 dBμ).
2. Using the signal generator, feed the PIF frequency (36.875MHz) signal (sinewave) to the tuner IF output terminal.
3. Set the tuning switch to the VHF or UHF position. Keep the tuning button (+) or (-) depressed until the beating on the oscilloscope screen be minimum.
4. Set the tuning switch on the normal position. Adjust TOO2 (AFT coil) so that beating on the oscilloscope screen be minimum.



ADJUSTMENT OF THE TV ELECTRICAL CIRCUITRY

- Chassis layout

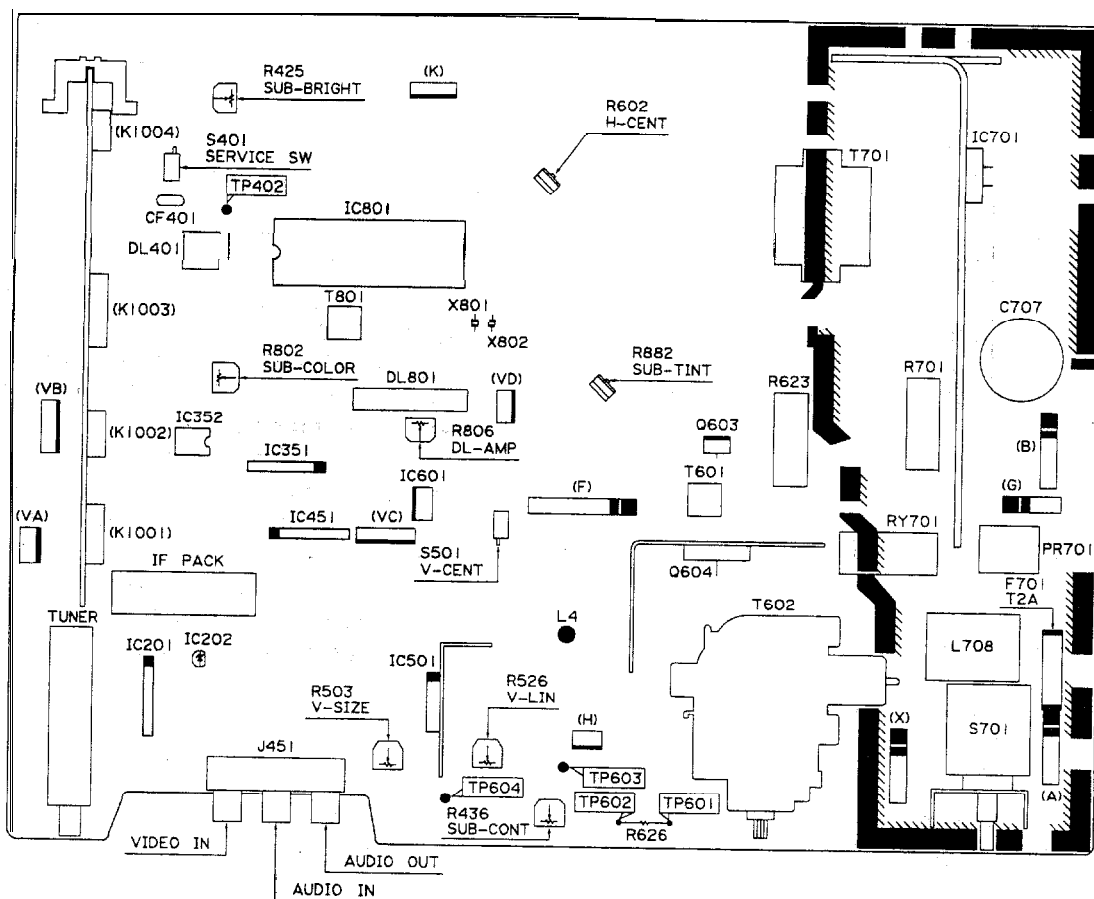


Figure 3-1. Mother PWB

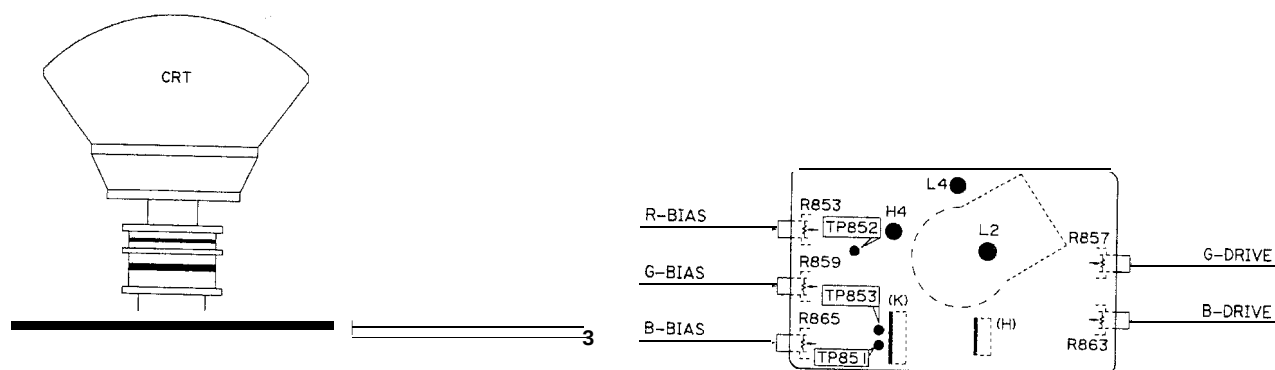


Figure 3-2. CRT Socket PWB

VIDEO/CHROMA ADJUSTMENT

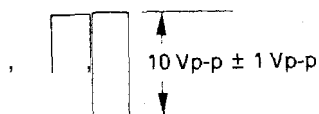
CRT cut-off and Sub-Brightness adjustment

- R853: R- bias control
- R859: G- bias control
- R865: B- bias control
- R857: G-drive control
- R863: B- drive control

Note:

Prior to this adjustment, warm up the unit with the beam current of more than **600 μ A** for more than 30 minutes

1. Receive "MONOSCOPE PATTERN" signal with pattern generator.
2. Set R857 (G-driver control) at CENTER (5/10) position
Set R863 (B-driver control) at CENTER (5/10) position.
Set R853 (R-bias control) at MIN(0/10) position.
Set R859 (G-bias control) at MIN(0/10) position.
Set R865 (B-bias control) at MIN(0/10) position.
3. Set the control at the "Normal" position that contrast is Max (15x15), colour is center (7/15) and brightness is center (7/15) using control, **Δ** and **∇** keys.
4. Set the screen control at MIN (0/10) position.
5. Turn on **S401** (service switch) at the horizontal line position.
6. Connect the oscilloscope to TP852 (Red cathode).
7. Adjust the sub-brightness control (R425) so that the blanking pulse on **oscilloscope** is 10 ± 1 Vp-p.



8. Slowly turn the screen control clockwise and **stop** it where the horizontal raster appears slightly, in one of the three **colours**.
9. Carefully adjust the bias controls of the other two **colours** until the horizontal raster becomes white.
10. Turn the screen control counterclockwise until the horizontal raster disappears, and stop it.

White balance/Back ground

- R857: G-drive control
- R863: B-drive control
- R436: Sub-Contrast control

Note:

Prior to this adjustment, warm up the unit with the beam current of more than **600 μ A** for more than 30 minutes.

1. Receive "MONOSCOPE PATTERN" signal with pattern generator.
2. Set the Contrast control and MAX position.

3. Set the brightness control at MAX position.
4. Connect beam ammeter to TP601 and TP602. (Full scale: 3mA)
5. Adjust the sub-contrast control (R436) so that the beam current becomes approx. **0.8mA** (rough adjustment).
6. Adjust the drive-control (**R857**, **R863**) so that the colour temperature is at 7500°K. (High beam: **0.8mA**)
7. Adjust the contrast control and brightness control so that the beam current is about **200 μ A**, and check that the colour temperature is at 7500°K. If the temperature is not at 7500°K, go back to "CRT cut-off adjustment" and repeat the adjustment.
(X = 0.300, Y = 0.310)

Sub-contrast control: R436

Note:

Prior to this adjustment, warm up the unit with the beam current of more than **600 μ A** for more than 30 minutes.

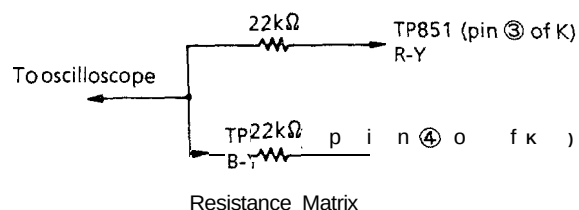
1. Receive "MONOSCOPE PATTERN" signal with pattern generator.
2. Set the Contrast controls at MAX position.
3. Set the brightness control at MAX position.
4. Connect beam ammeter to TP601 (–) and TP602 (+). (Full scale: 3mA)
5. Adjust R436 so that the beam current becomes **0.8mA**.

PAL chroma adjustment

Note:

Before this adjustment, the PIF/AFT/AGC adjustment must have been completed.

- R806: 1 H-delay amp control
 - T801: 1 H-delay phase control
1. Receive "PAL COLOUR BAR" signal with colour bar generator.
 2. Connect the following resistance matrix to pins ③ and ④ of the connector (K), to which an oscilloscope is connected.



3. Set service switch **S401** at the Video Cut position to cut off the **Y** signal.
4. Adjust the colour control key so that the output waveform of colour difference signal becomes 1.5 vp-p.
5. Adjust R806 and T801 so that the output waveform shown in Fig. a is corrected to that shown in Fig. b.
6. Return **S401** to CENTER (normal position).

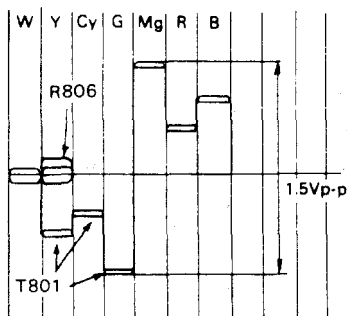


Figure a. Waveform before the adjustment

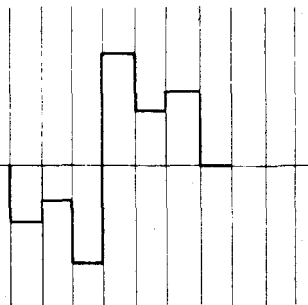
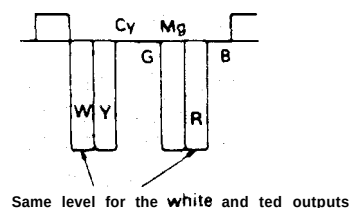


Figure b. Waveform after the adjustment

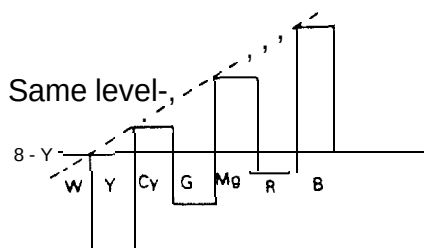
PAL Sub-colour adjustment: R802

1. Receive "PAL COLOUR BAR" signal with colour bar generator.
2. Set the control at the "Normal" position that contrast is Max. (15/15), colour is center (7/15) and brightness is center (7/15) using control, A and V keys.
3. Connect oscilloscope to the TP852 (Red cathode).
 - Range: 20V/div
 - Sweep time: 20μsec/div
4. For PAL colour bar signal reception, adjust R802 so that the white output (75%) and red output will have the same level.



Sub tint: R882

1. Feed "NTSC COLOUR BAR" signal to video in jack with colour bar generator at the AV mode.
2. Connect oscilloscope to TP853 (B-Y).
3. Set the TINT VR (**R1098**) at the center (5/10) position.
4. Set service switch **S401** at the Video Cut position to cut off the **Y** signal.
5. Adjust colour control key to obtain the output of about 3 Vp-p.
6. Adjust sub tint control (R882) so that the output waveform is as shown in figure below.
7. Return **S401** to CENTER (normal position).



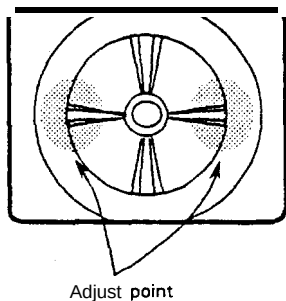
ADJUSTMENT OF DEFLECTION LOOP

Note:

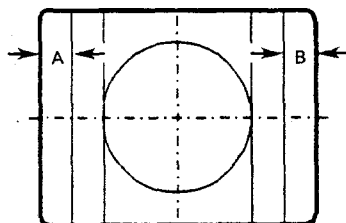
- During the adjustment, keep the unit facing the east.

Focus adjustment

1. Receive "MONOSCOPE PATTERN" signal.
2. Set Contrast control at NORMAL position.
3. Set Brightness control at NORMAL position.
4. Adjust Focus control to have best focus at the central area of CRT.

**Horizontal centering control: R602**

- * This adjustment should be performed after the purity and convergence adjustments.
1. Receive "MONOSCOPE PATTERN" signal.
 2. Adjust R602 so that the horizontal center of picture is at the position which gives the relation of $A = B$ shown below.

**Vertical linearity control: R526**

1. Receive "MONOSCOPE PATTERN" signal.
2. Adjust R526 so that the vertical linearity of picture is at best point.

Vertical size control: R503

1. Receive "MONOSCOPE PATTERN" signal.
 2. Set the Brightness control and Contrast control at MAX position.
 3. Adjust R503 so that the vertical size of picture is at the same size as horizontal size.
- Vertical size: 9% TYP (Max. 11%)

Vertical centering control: S501

- * This adjustment should be performed after the purity and convergence adjustments.
1. Receive "MONOSCOPE PATTERN" signal.
 2. Adjust S501 so that the picture's vertical center is identical to CRT geometrical vertical center.

PURITY ADJUSTMENT

Note:

- During the adjustment, keep the unit facing the east.

Purity adjustment

- Prior to the purity adjustment, warm up the unit with beam current of more than $500\mu\text{A}$, for more than 30 minutes.
- Receive the green signal alone and adjust the beam current to about $500\mu\text{A}$.
- Fully degauss the CRT with the degaussing coil.
- Before the purity adjustment, it is needed to roughly adjust the static convergence.
- Set the purity magnet at the position which gives zero (0) magnetic field.

Adjustment:

- Observe the green spots ("a" and "b") with a microscope as shown in Fig. 3-3., and adjust the purity magnet so that they are at the specified landing position.

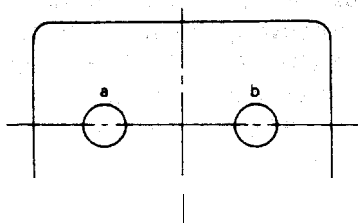


Figure 3-3.

- If the right and left green spots are both deviated outwards from their landing positions as shown in Fig. 3-4 push the deflection yoke forwards until their positions are corrected.

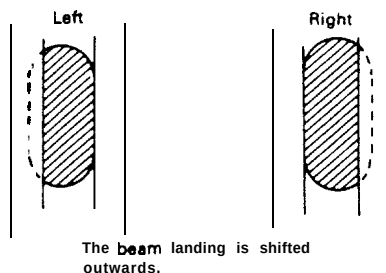


Figure 3-4.

- If the beam landing is shifted to right or to left as shown in Figs. 3-5. and 3-6., adjust the opening degree of the purity magnet so that the beam landing is correctly positioned.

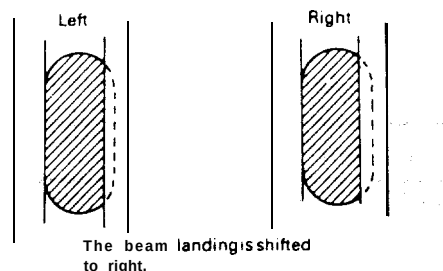


Figure 3-5.

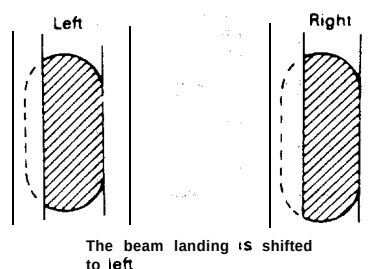


Figure 3-6.

- Adjust the purity magnet so that the beam landing is correct at either of the central part, right and left parts of screen, then check that the green beams at four corners of screen are all correctly positioned.

Finally, check that the beam landing at any part of screen is satisfactory with the Rank "B" specifications.

- If the green beam is positioned to mix with the other colour, pull the deflection yoke backward.
 - Outside of the specified landing: To front of the deflection yoke
 - Inside of the specified landing: To back of the deflection yoke
- Receive "MONOSCOPE PATTERN" signal or "CROSSHATCH PATTERN" signal.
- Set the raster rotation at "0" position (with the unit facing the east.)
- Tighten the screws of the deflection coil.
Tightening torque: $11 \text{ kg} \pm 2 \text{ kg}$

CONVERGENCE ADJUSTMENT

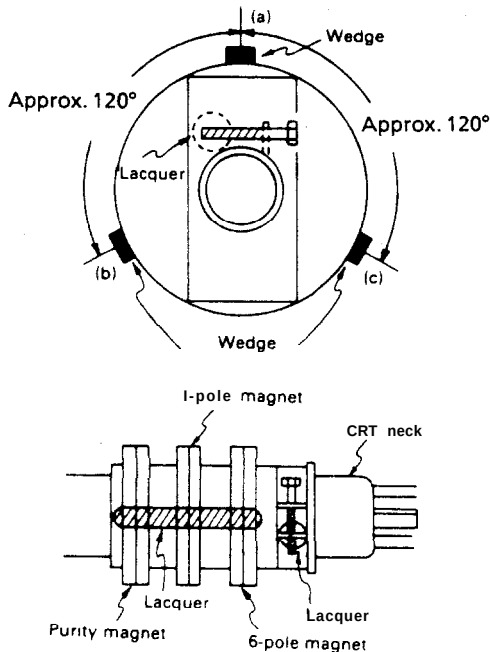
Note:

- During the adjustment, keep the unit facing the east.

Convergence adjustment

This adjustment should be performed after the purity magnet adjustment.

- Receive crosshatch pattern signal with pattern generator.
- Set the Brightness control at CENTER position.
Set the Contrast control at MAX position.



- Static Convergence
- Adjust the opening degree of the **4-pole** magnet and rotate the magnet to converge red and blue lines.
 - Adjust the opening degree of the **6-pole** magnet and rotate the magnet to converge red, blue and green lines.
- Dynamic convergence
- Dynamic convergence (convergence of the three colour fields) at the edges of CRT screen is accomplished in the following manner.

- Convergence in Fig. 3-7.:
Insert wedge (a) between the deflection yoke and CRT, and tilt the deflection yoke upward until the mis-convergence shown in Fig. 3-7. is corrected.

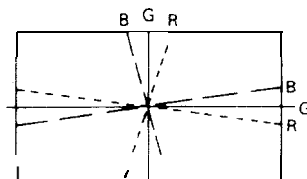


Figure 3-7.

- Convergence in Fig. 3-8.:
Insert wedges (b) and (c) between the deflection yoke and CRT, and tilt the deflection yoke downward until the mis-convergence shown in Fig. 3-9. is corrected.

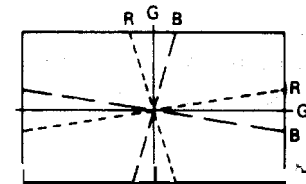


Figure 3-8.

- Convergence in Fig. 3-9.:
Insert wedge (c) deeply between the deflection yoke and CRT, and tilt the deflection yoke to right until the mis-convergence shown in Fig. 3-9. is corrected.

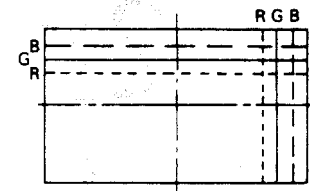


Figure 3-9.

- Convergence in Fig. 3-10.:
Insert wedge (b) deeply between the deflection yoke and CRT, and tilt the deflection yoke to left until the mis-convergence shown in Fig. 3-10 is corrected.

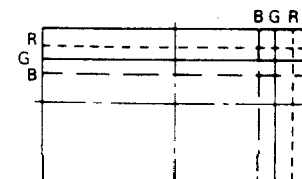


Figure 3-10.

- Stick the three wedges onto the CRT, and apply glass tapes thereon.
- Apply lacquer to the deflection yoke screw, magnet unit (made of purity, 4-pole and 6-pole magnets) and magnet unit screw.

After the adjustment, receive either the Red or the Blue signal and check that there is no mixture with the other colour signal.

CRT DISPLAY ADJUSTMENT

Note :

- During the adjustment, keep the unit facing the east.

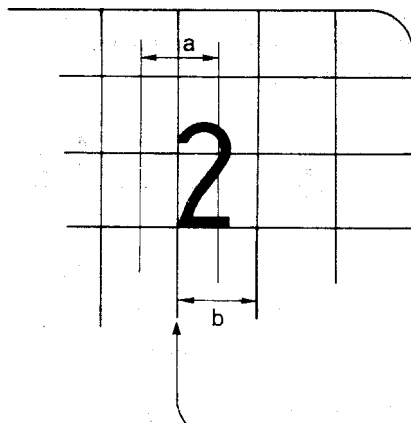
Sign position control: R1001

1. Select channel "2".
2. Receive "CROSSHATCH PATTERN" signal.
3. Press the Mode OSD button on the Remote Controller.
4. Adjust R1001 to obtain the sign position as shown below.
5. After adjustment, confirm that there is no defect in the on-screen characters with no signal and AV mode.

* The error in the settlement of charactor position must be $b > a$.

a: the range of the error in the settlement

b: range between two crosshatch vertical lines



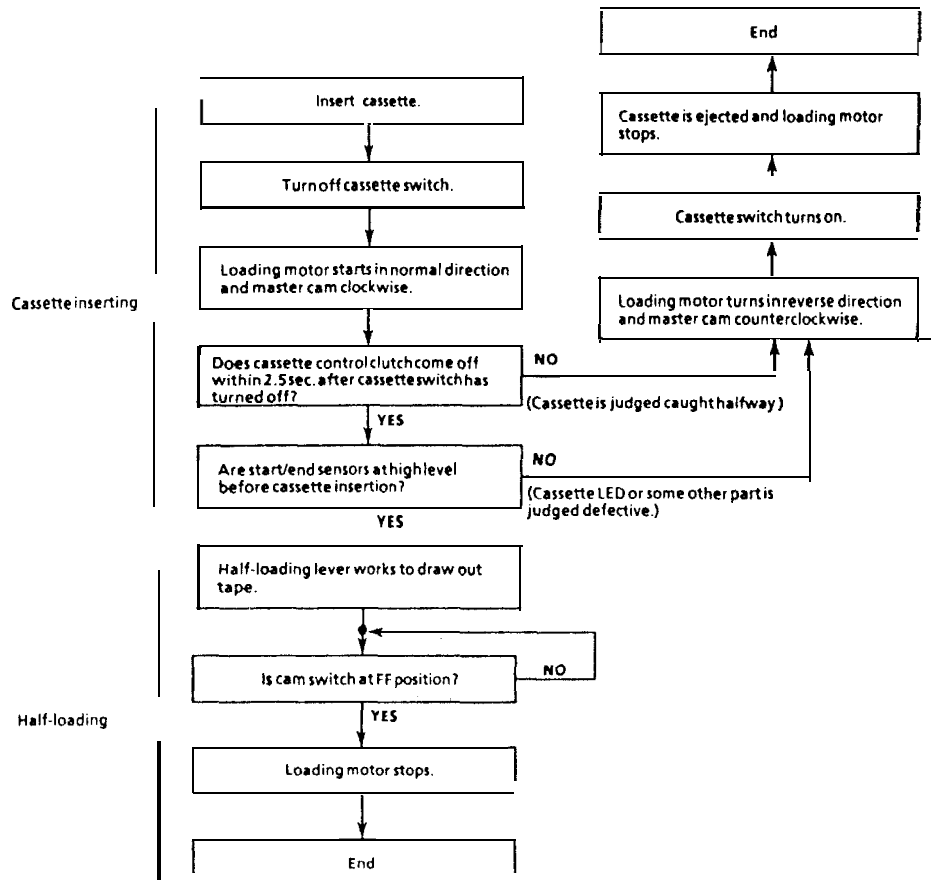
Align the right edge of channel number with crosshatch's third vertical line from right.

TROUBLESHOOTING FLOWCHART

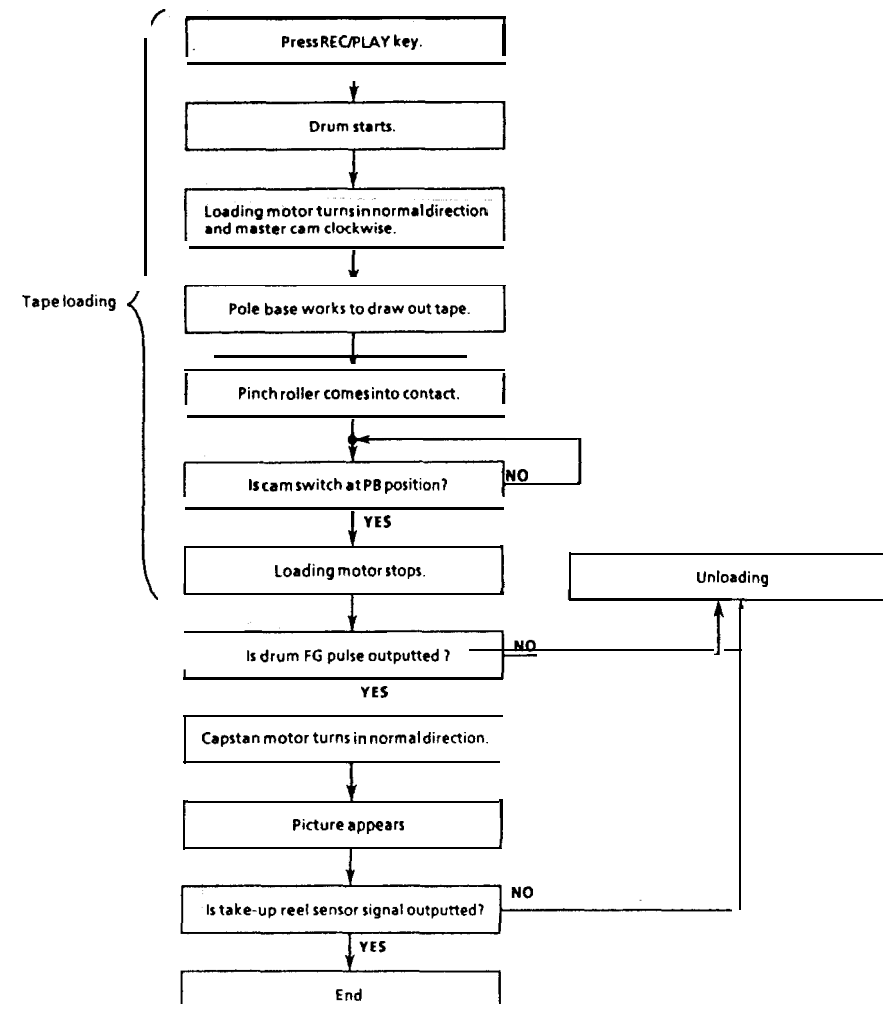
MECHANISM OPERATION FLOWCHART

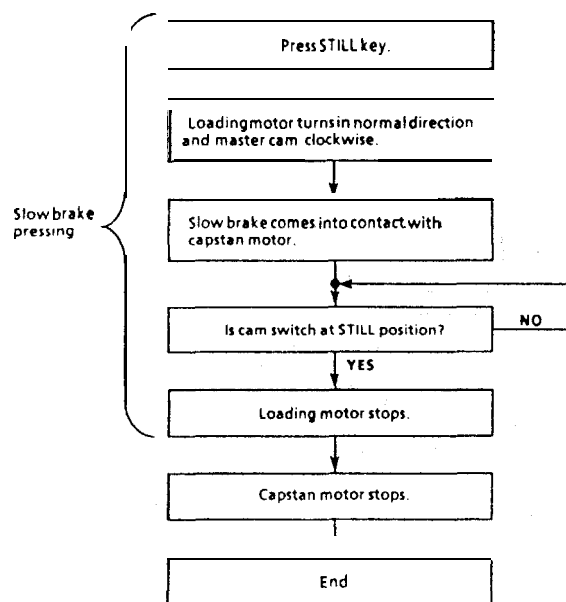
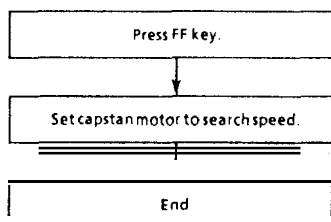
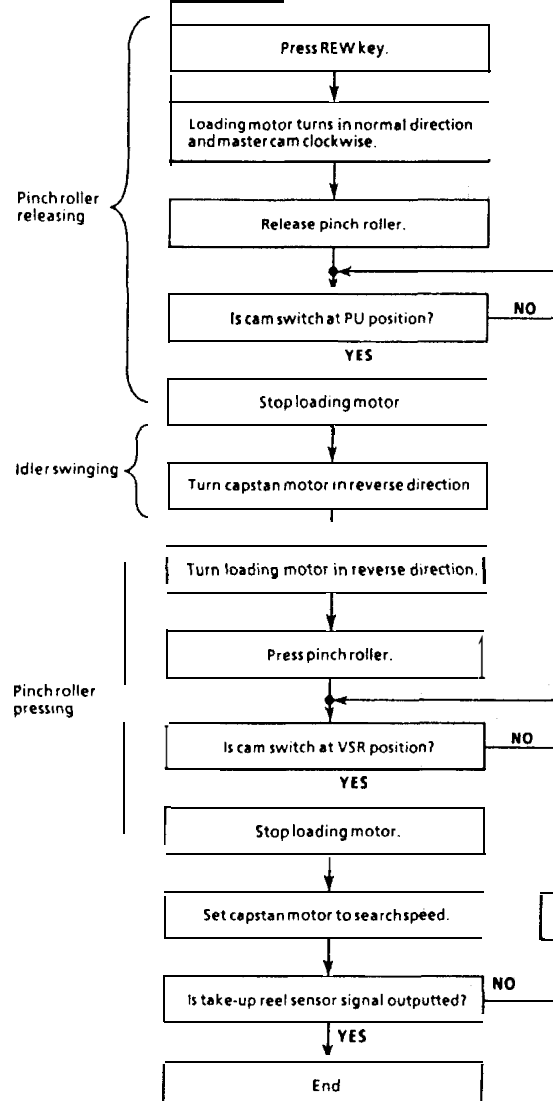
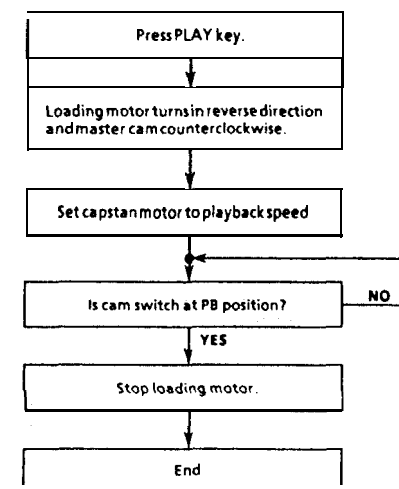
- This flowchart describes the outline of the mechanism's operation, but does not give its details.
- For cam switch positions, see Fig. 4-2.

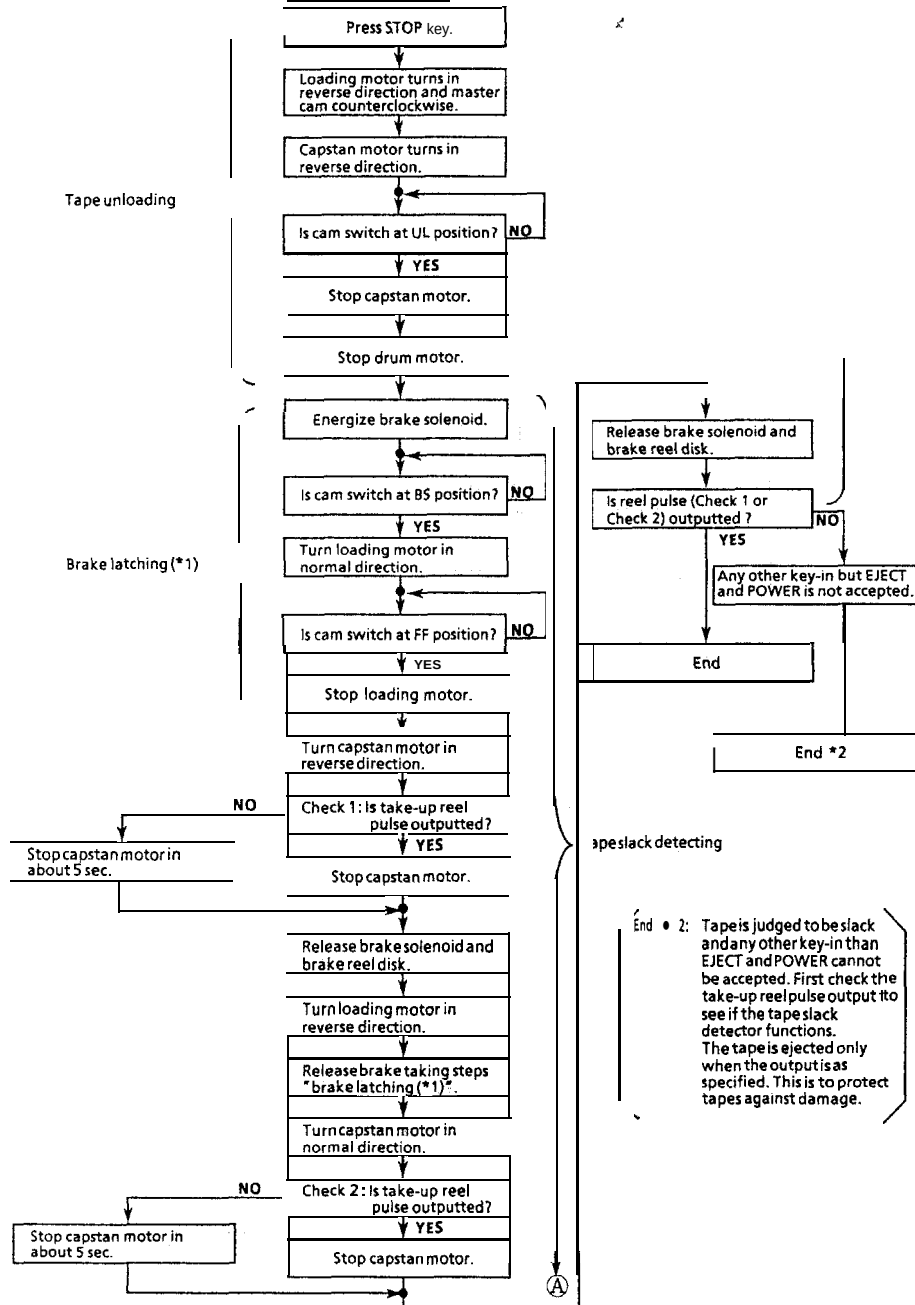
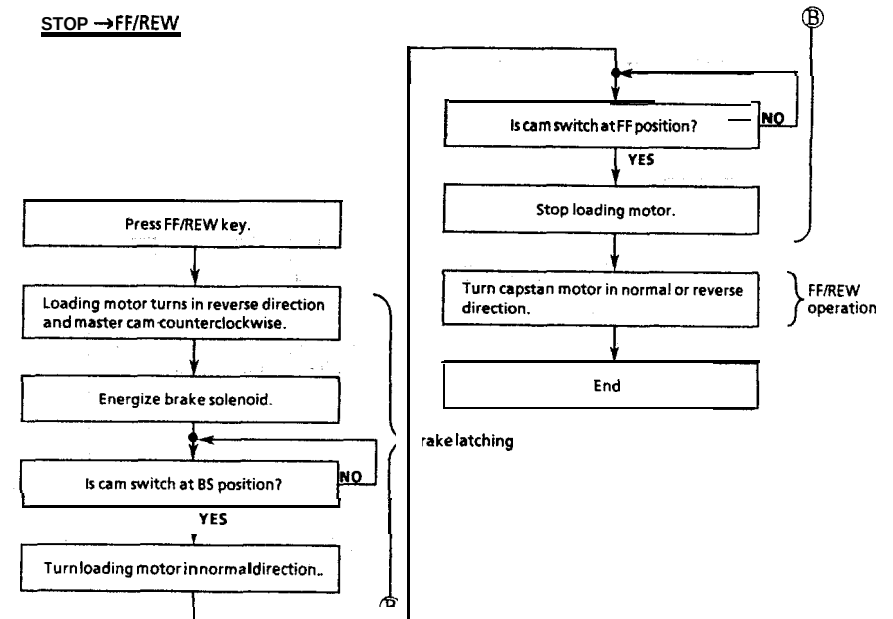
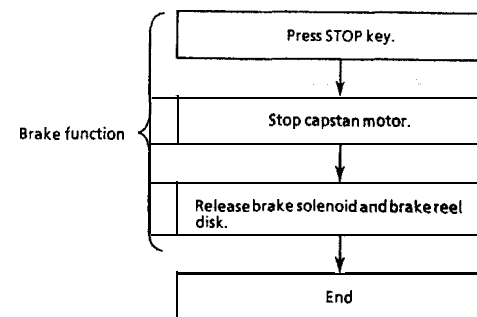
CASSETTE INSERTION → STOP



STOP → REC/PLAY



PLAY → STILLPLAY → VSFPLAY → VSRVSR → PLAY

REC /PLAY → STOPSTOP → FF/REWFF/REW → STOP

STOP → CASSETTE EJECT

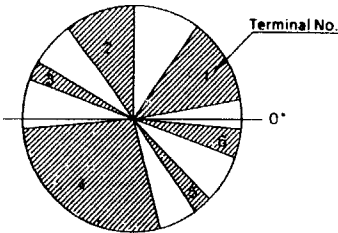
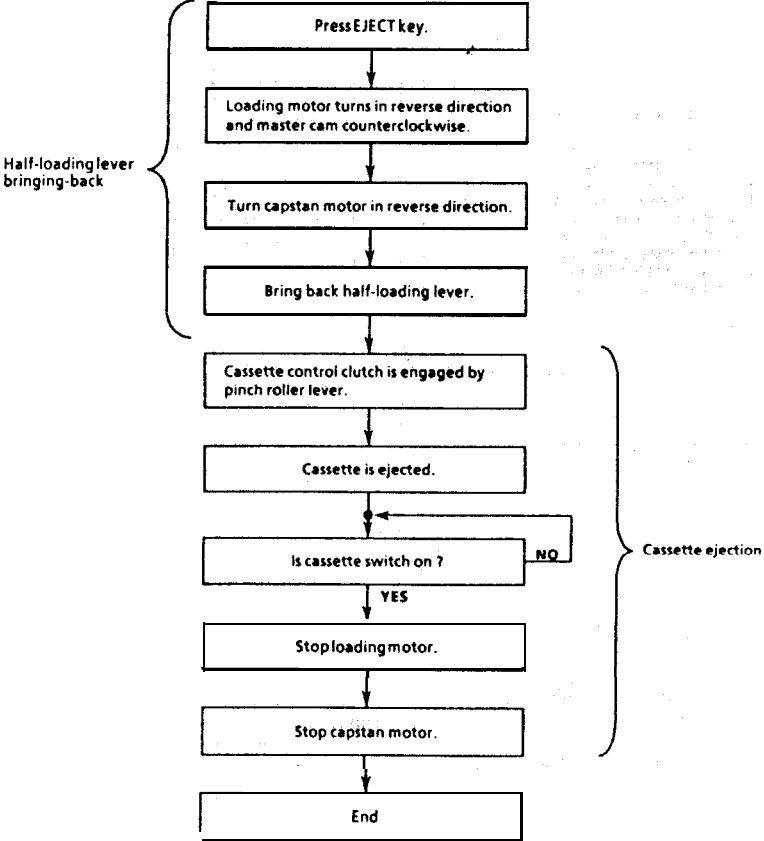


Fig. 4-1 cam switch pattern

- The cam switch has the pattern as shown in Fig. 4-1. The circuit turns on when the signal comes on the shaded zones on the switch. The six pattern signals are judged to be on or off by the system controller in order to detect the mechanism modes.

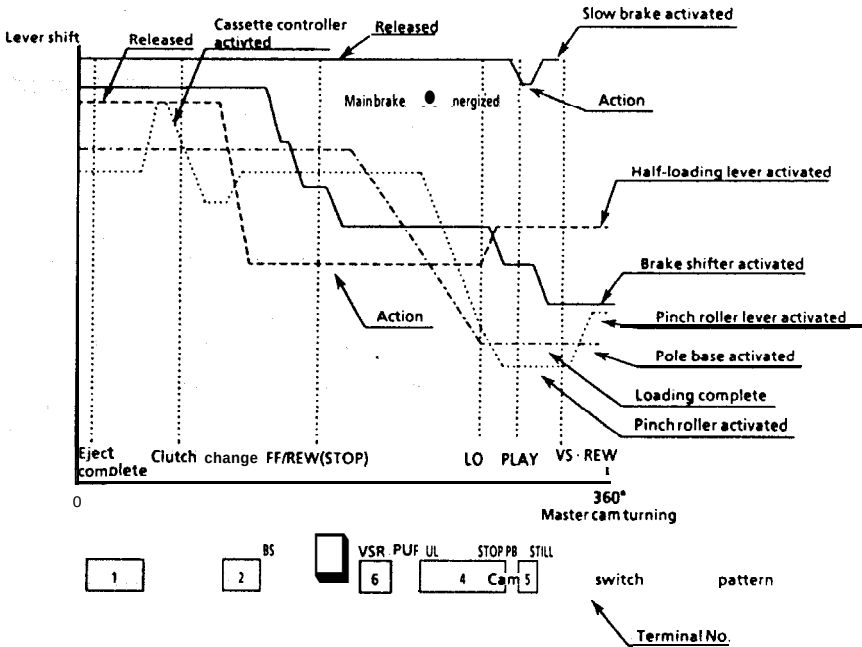
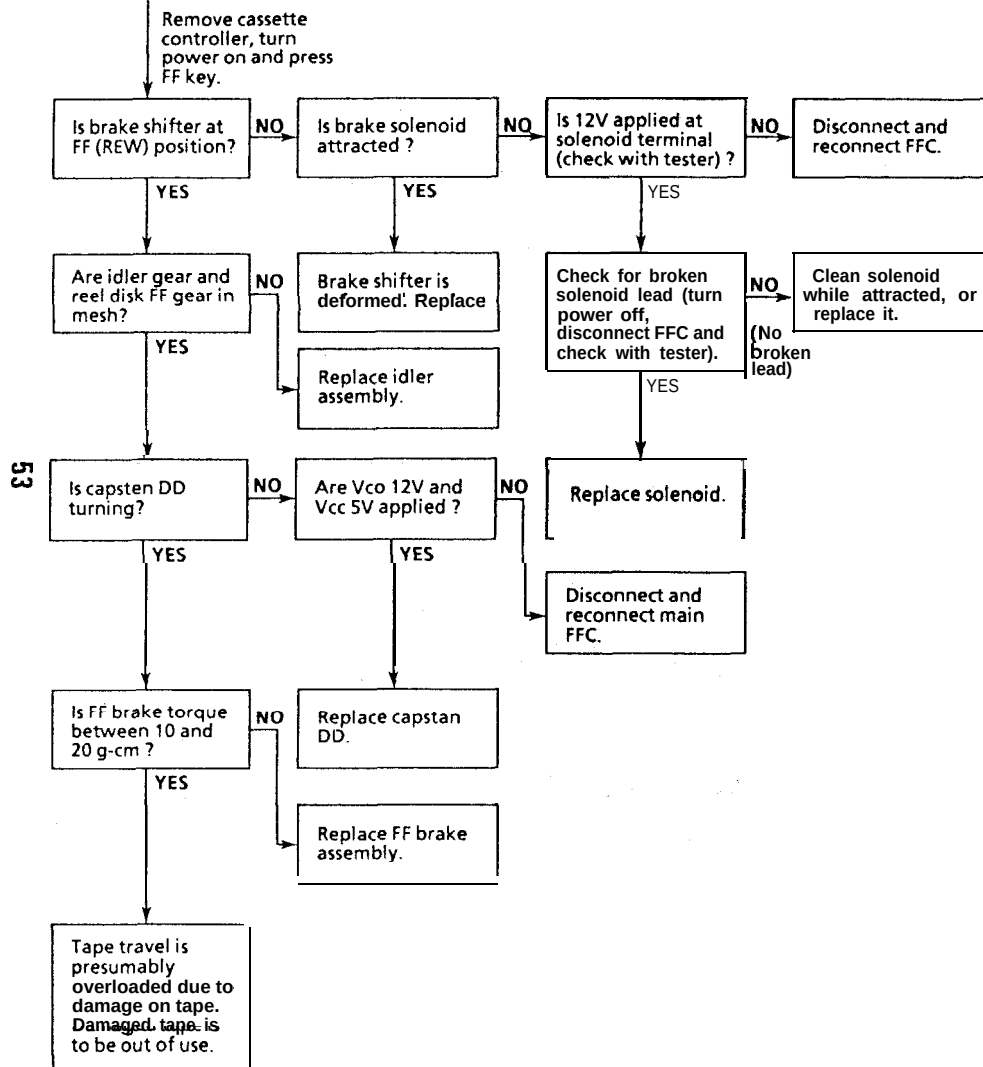


Fig. 4-2 Relationship between cam switch positions and mechanism movement

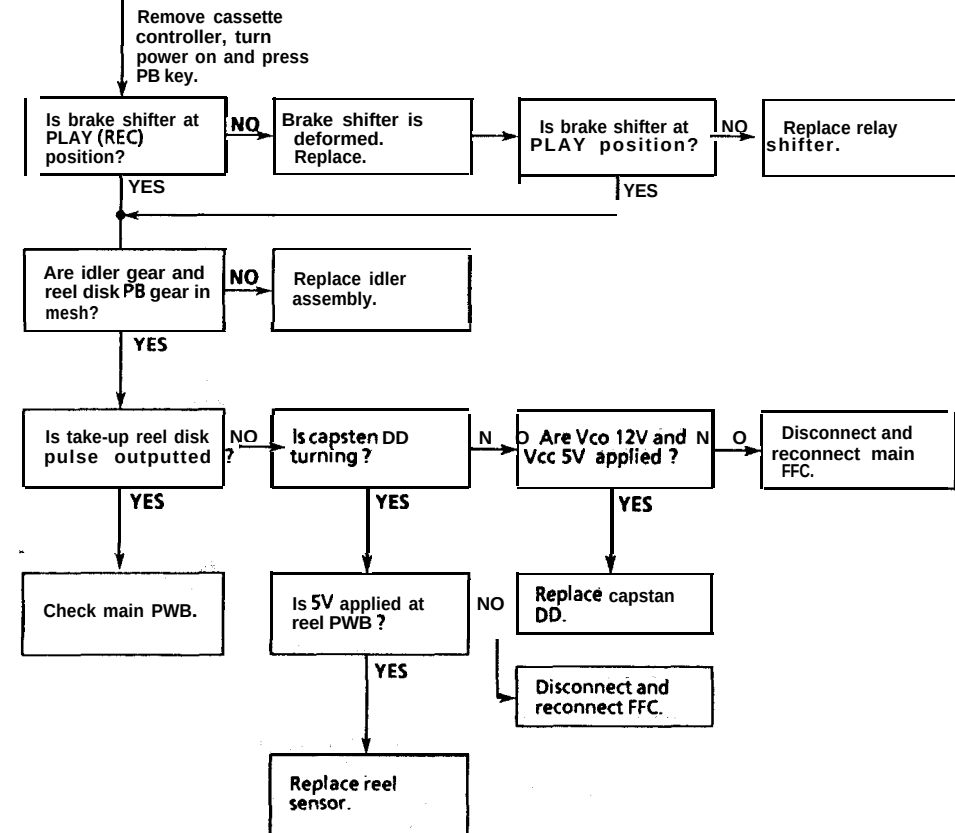
The relationship between the cam switch positions and the mechanism movement is shown in Fig 4-2

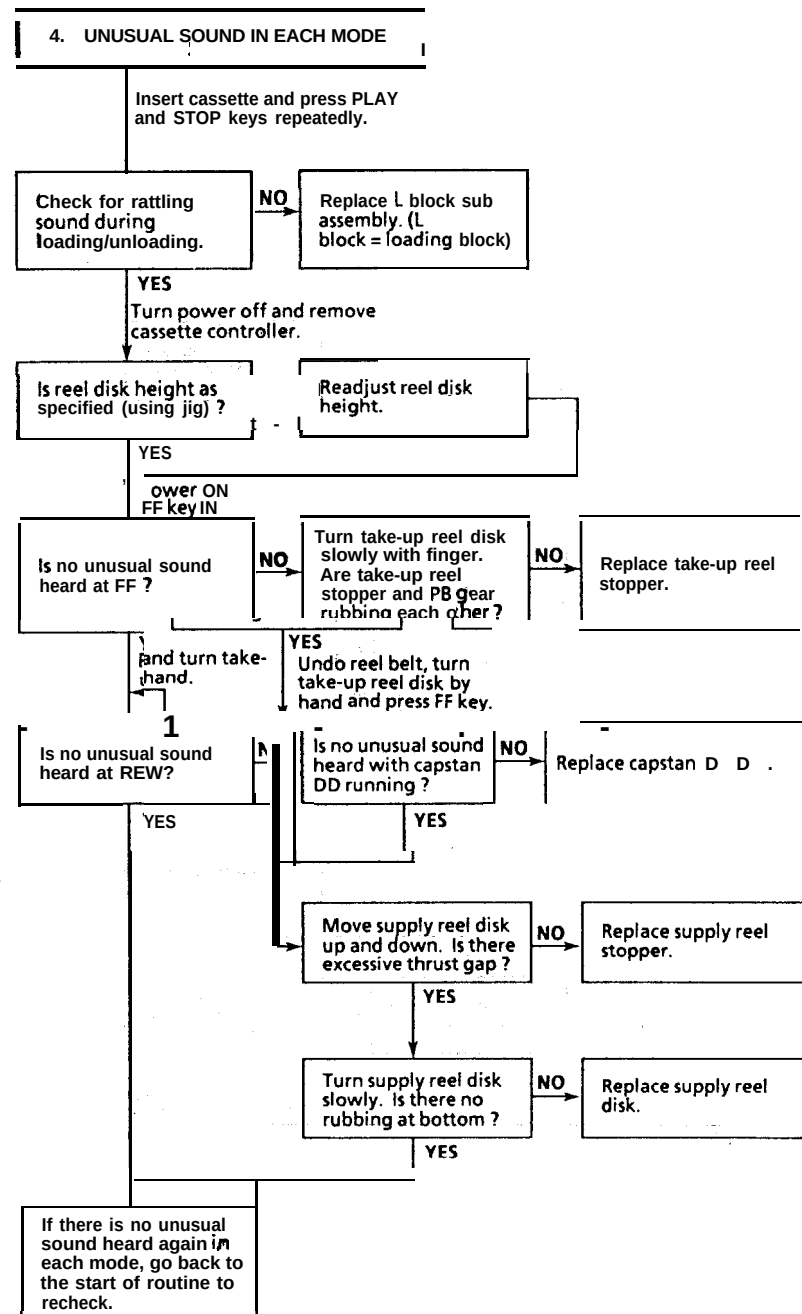
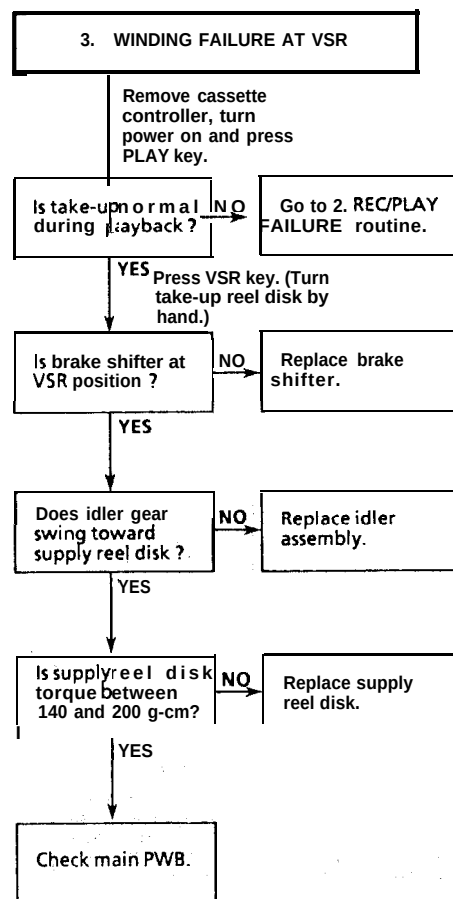
MECHANISM TROUBLESHOOTING

1. FF/REW FAILURE (NO TAPE WINDING)



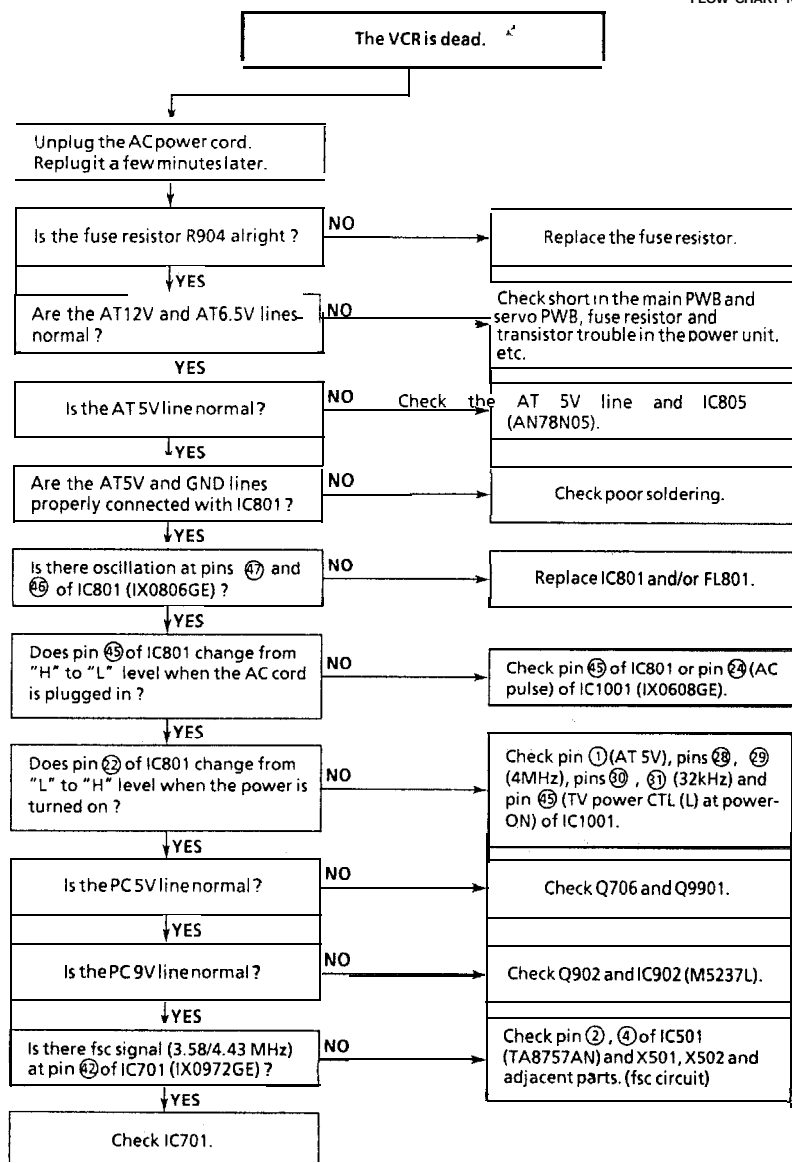
2. REC/PLAY FAILURE (MODE RELEASE)





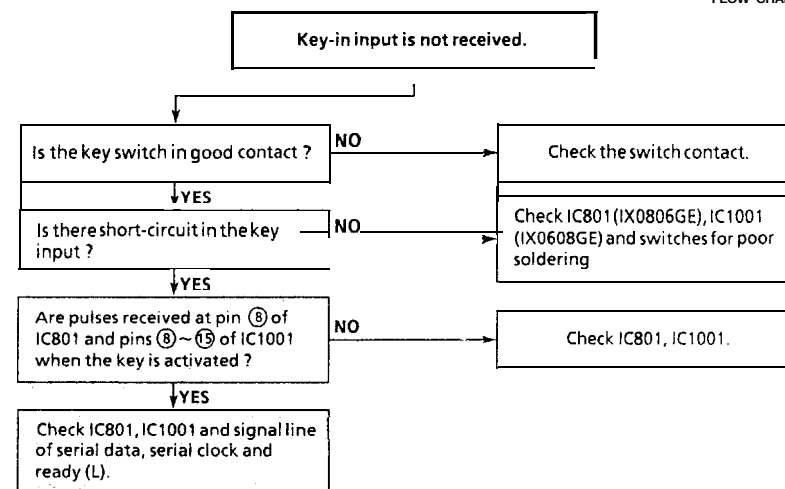
VCR POWER TROUBLESHOOTING

FLOW CHART NO. 1-1



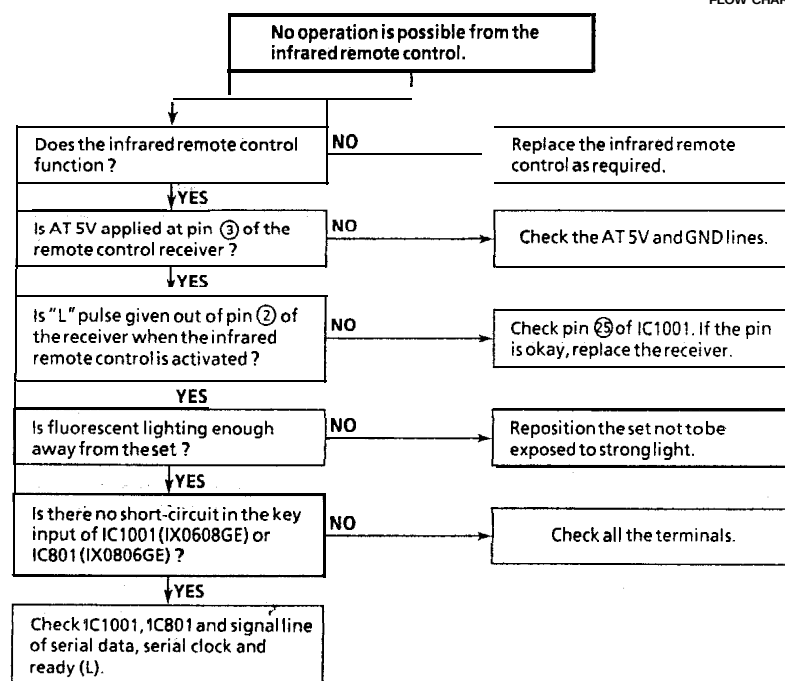
KEY-IN TROUBLESHOOTING

FLOW CHART NO. 1-2



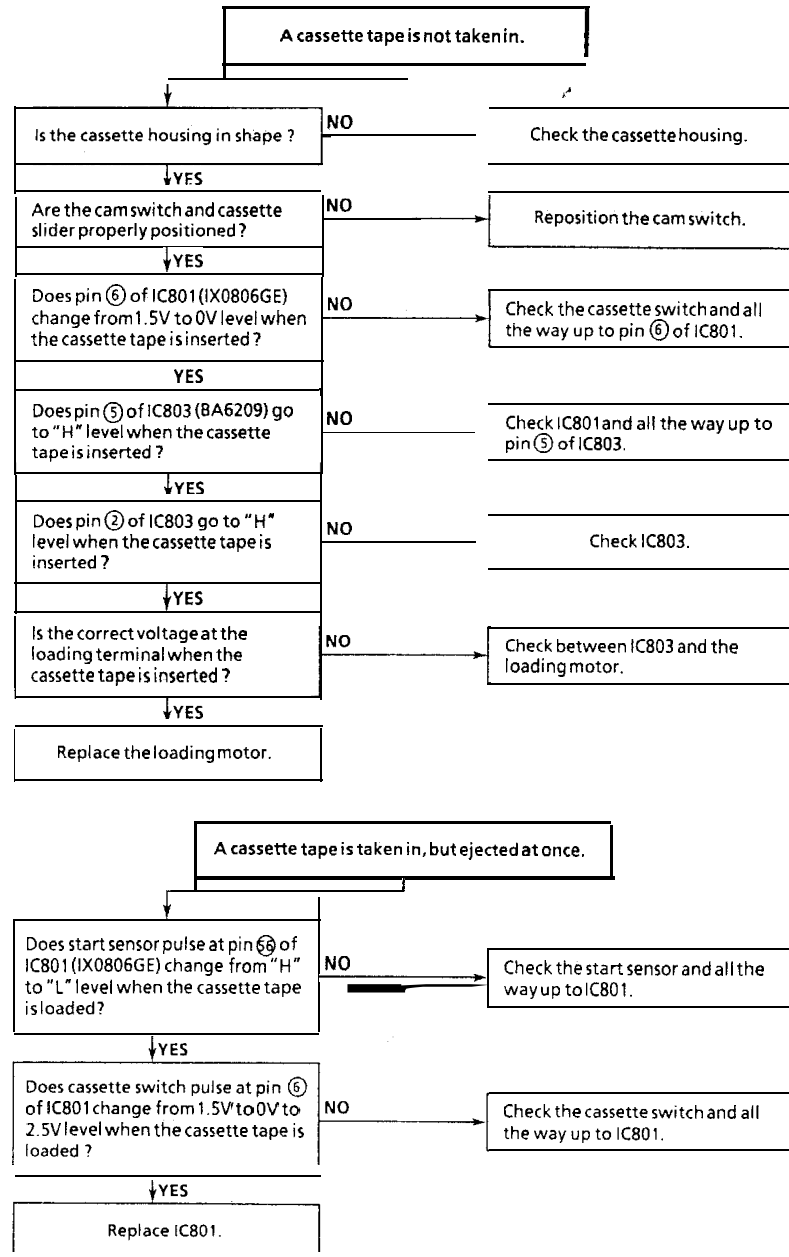
INFRARED R/C TROUBLESHOOTING

FLOW CHART NO. 1-3



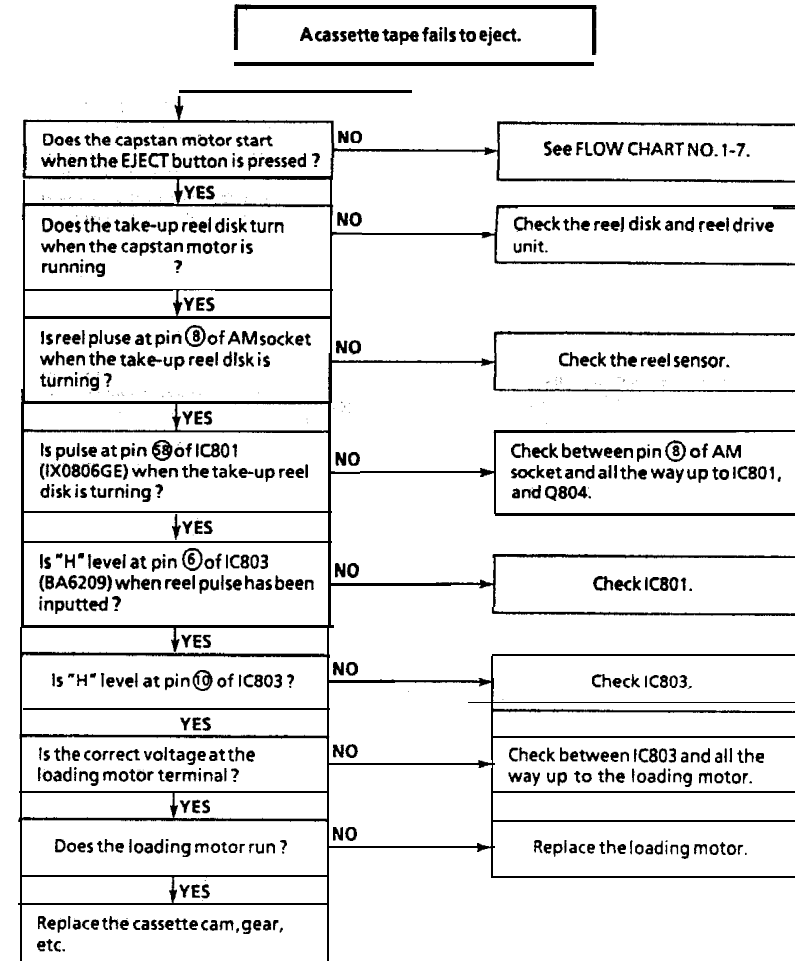
CASSETTE CONTROL TROUBLESHOOTING

FLOW CHART NO. 1-4



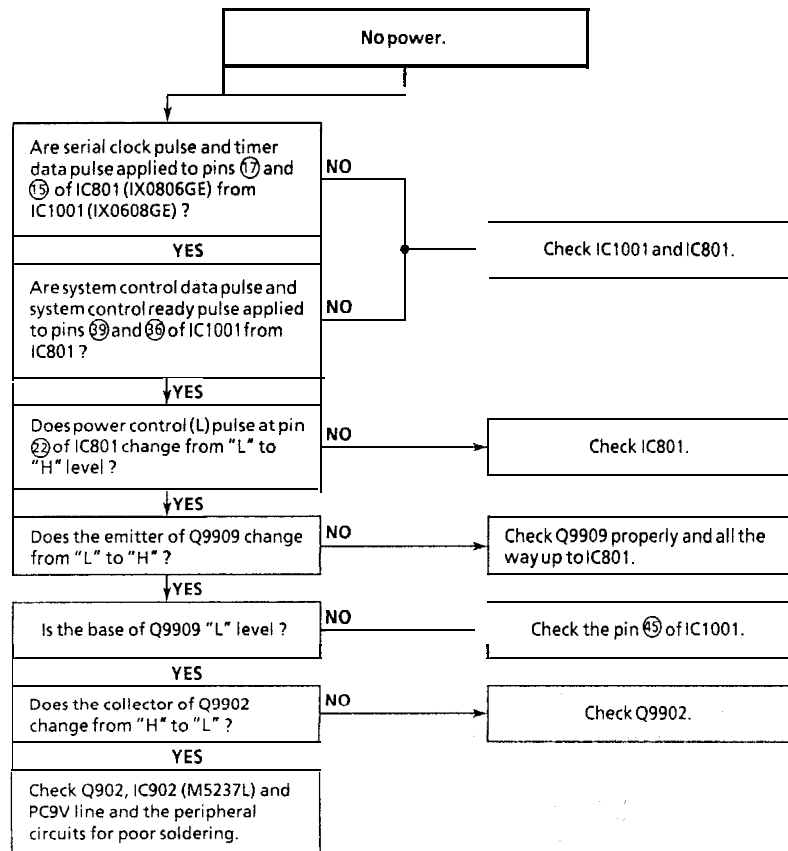
LOADING MOTOR AND EJECT TROUBLESHOOTING

FLOW CHART NO. 1-5



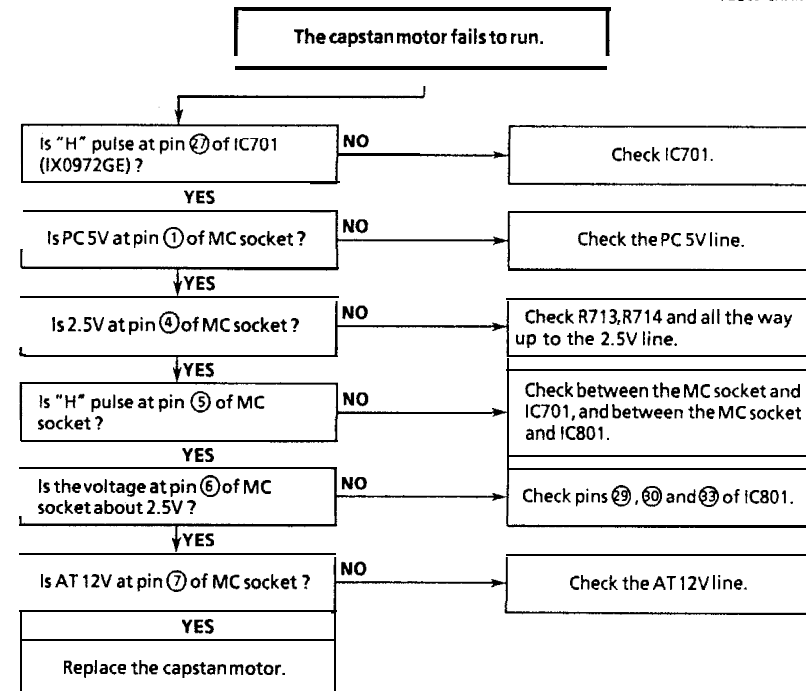
SYSTEM CONTROL TROUBLESHOOTING

FLOW CHART NO. 1-6



CAPSTAN MOTOR TROUBLESHOOTING

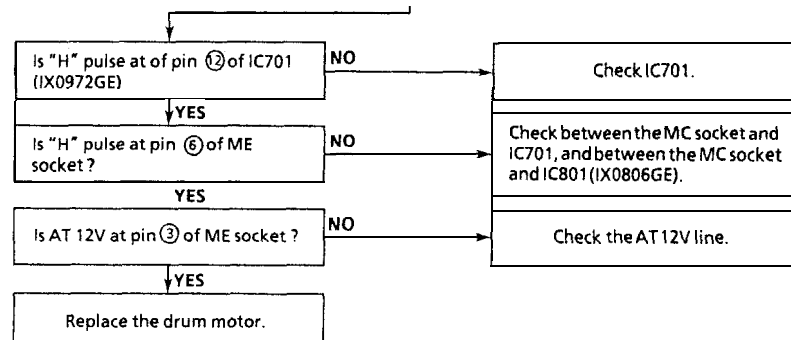
FLOW CHART NO. 1-7



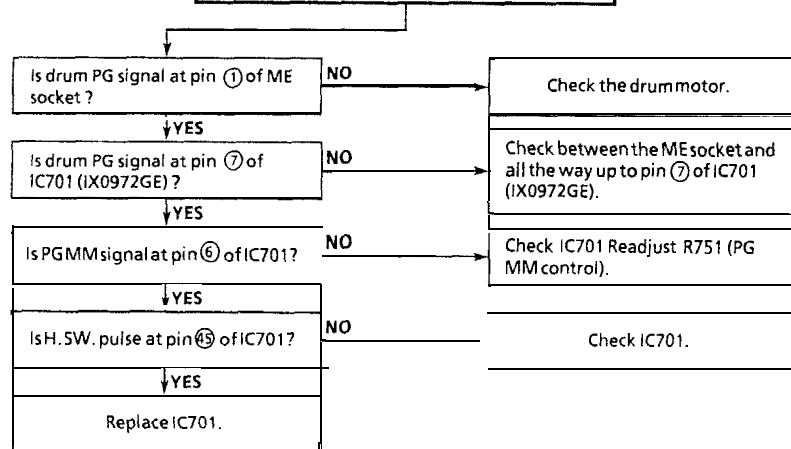
DRUM MOTOR TROUBLESHOOTING

FLOW CHART NO. 1-8

The drum motor fails to run.



The drum motor runs only for a few seconds.



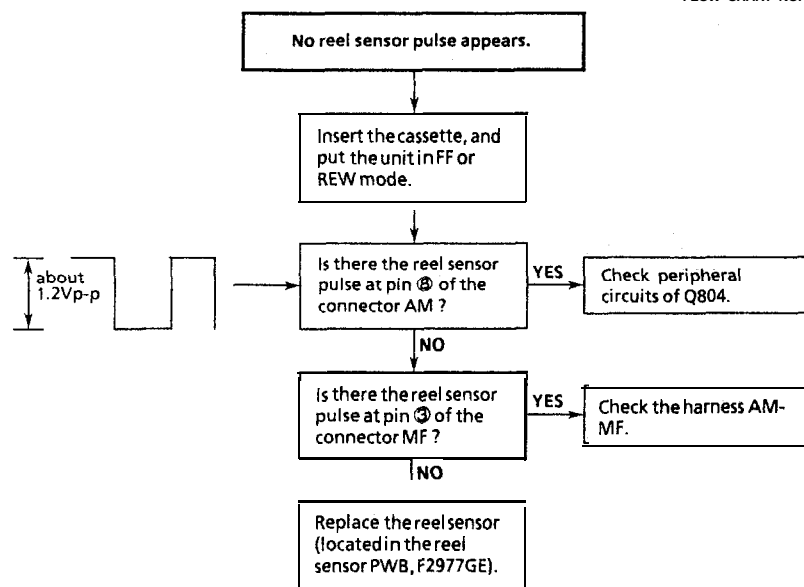
Capstan servo does not function.

FLOW CHART NO. 1-10



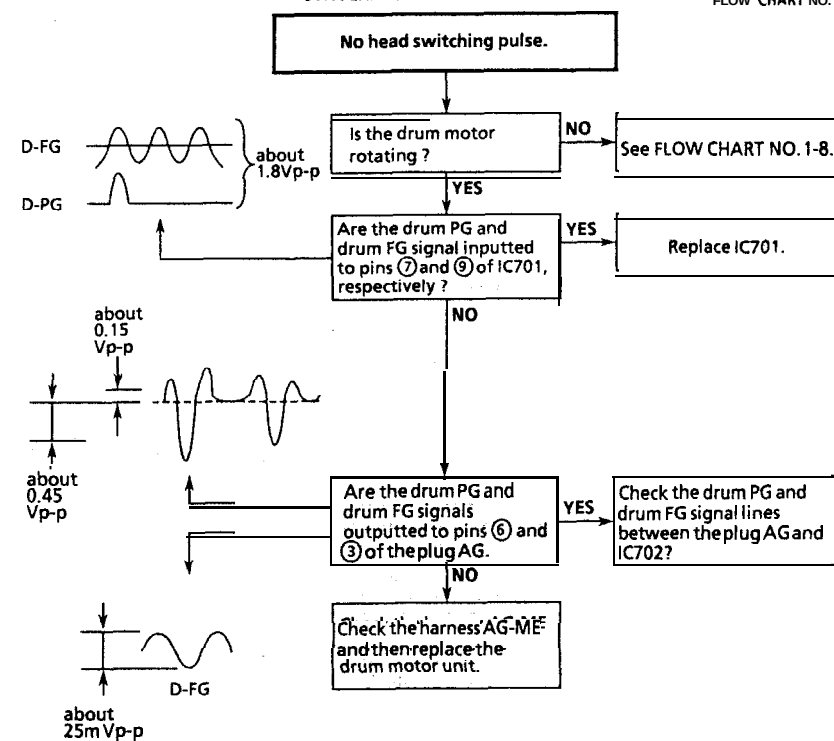
TAKE-UP REEL PULSE GENERATOR TROUBLESHOOTING

FLOW CHART NO. 1-11



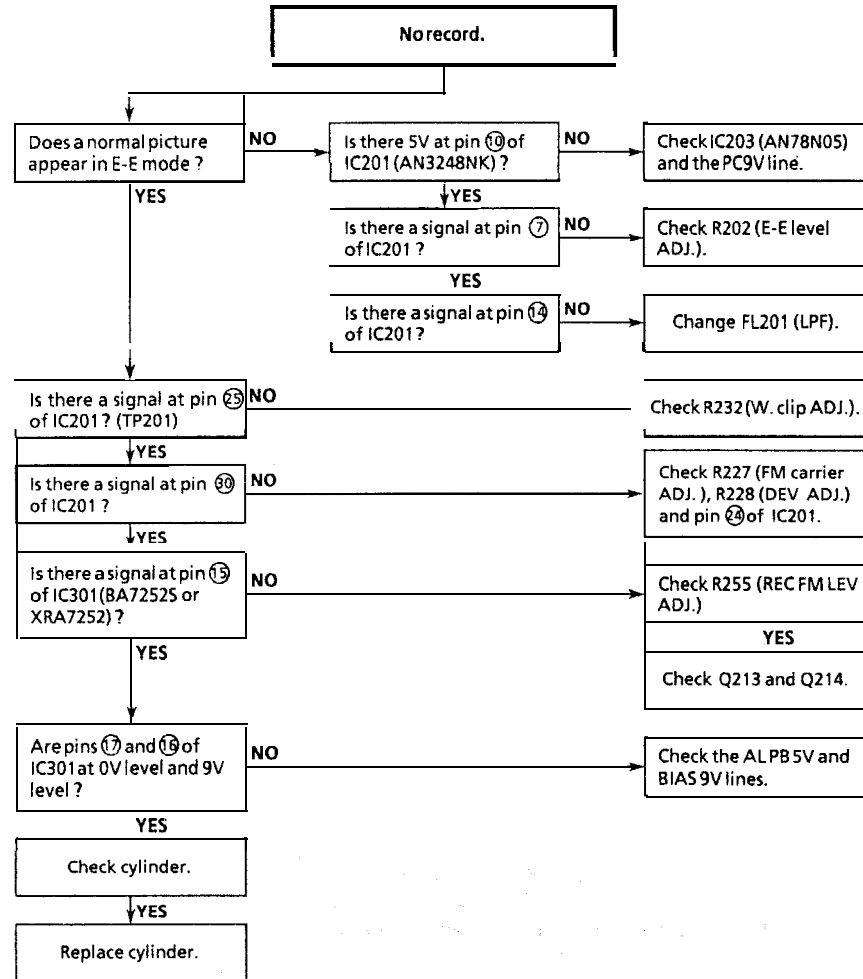
HEAD SWITCHING PULSE TROUBLESHOOTING

FLOW CHART NO. 1-12



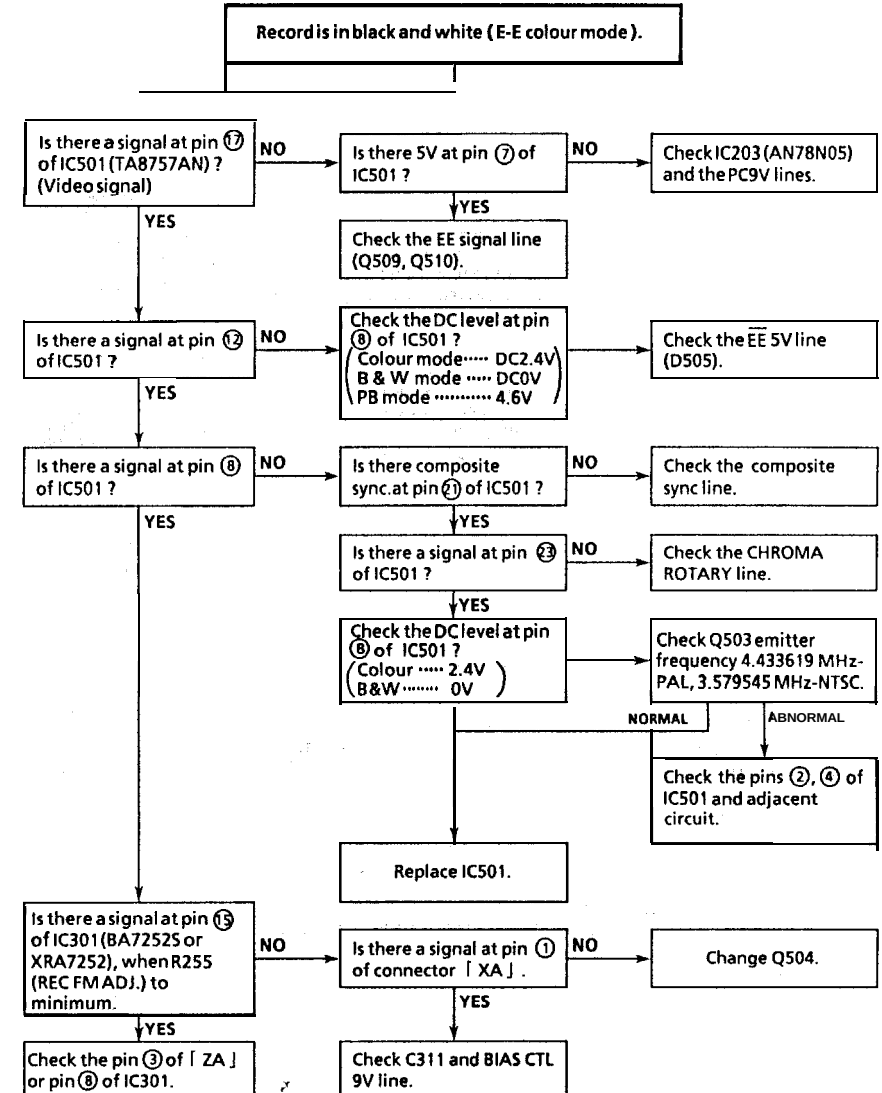
VCR RECORDING MODE (LUMINANCE) TROUBLESHOOTING

FLOW CHART NO. 1-13



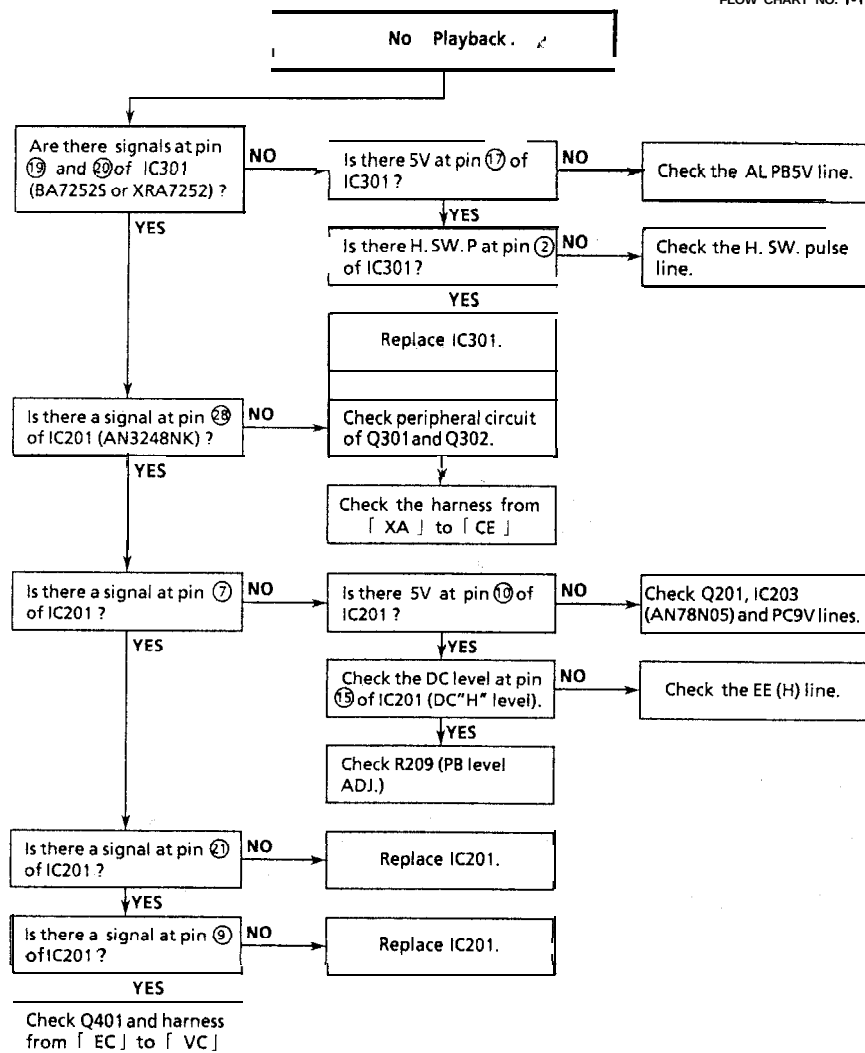
VCR RECORDING MODE (CHROMA) TROUBLESHOOTING

FLOW CHART NO. 1-14



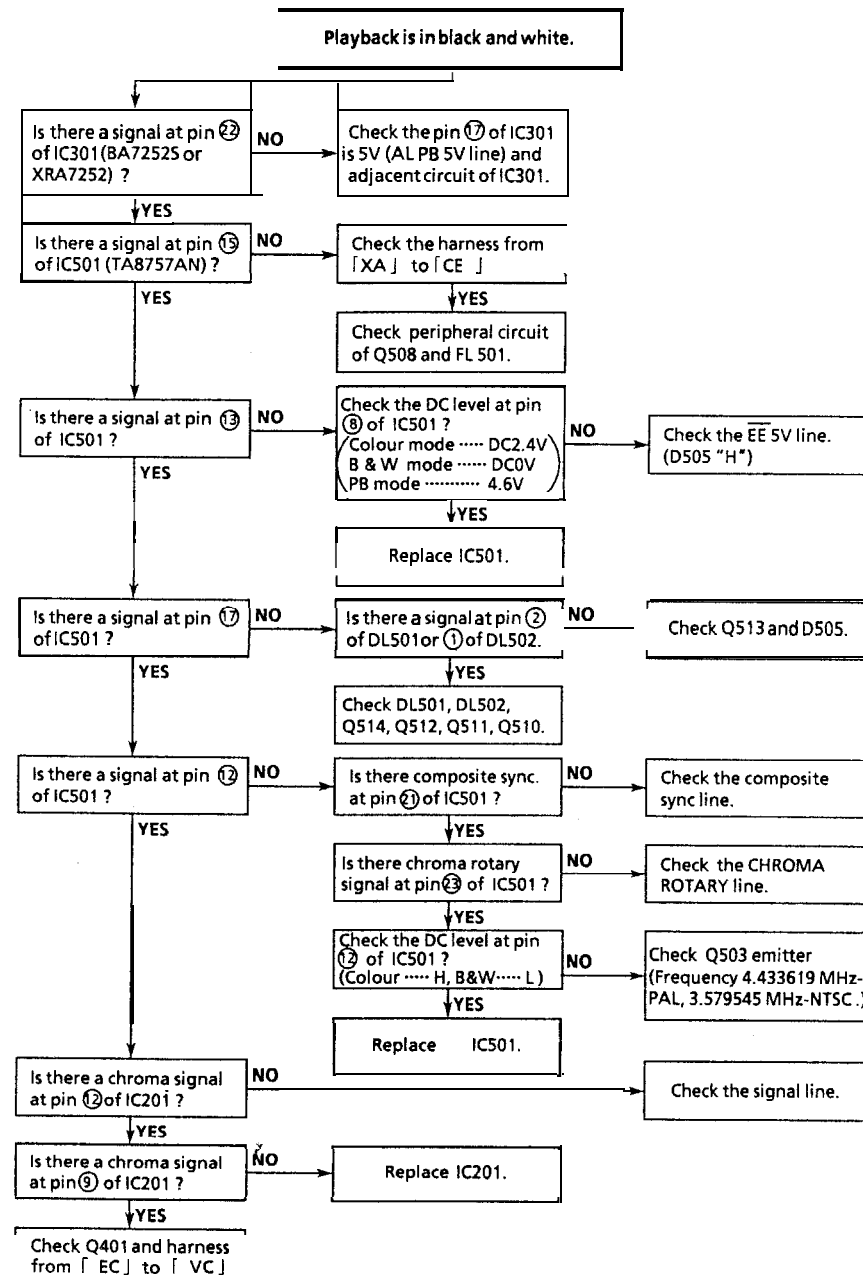
VCRPLAYBACK MODE (LUMINANCE) TROUBLESHOOTING

FLOW CHART NO. 1-15



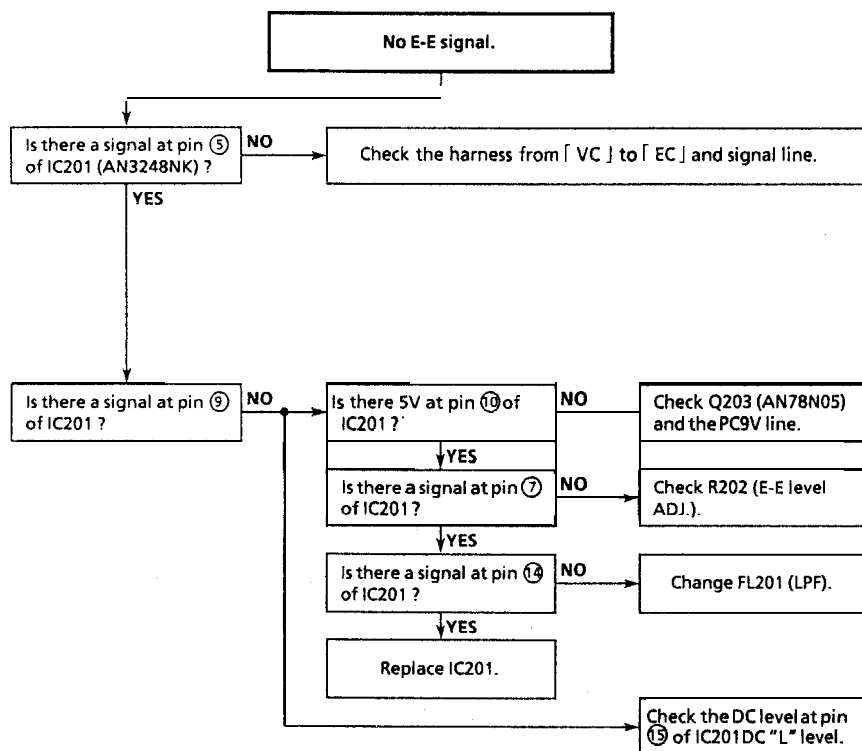
VCRPLAYBACKMODE(CHROMA) TROUBLESHOOTING

FLOW CHART NO. 1-16



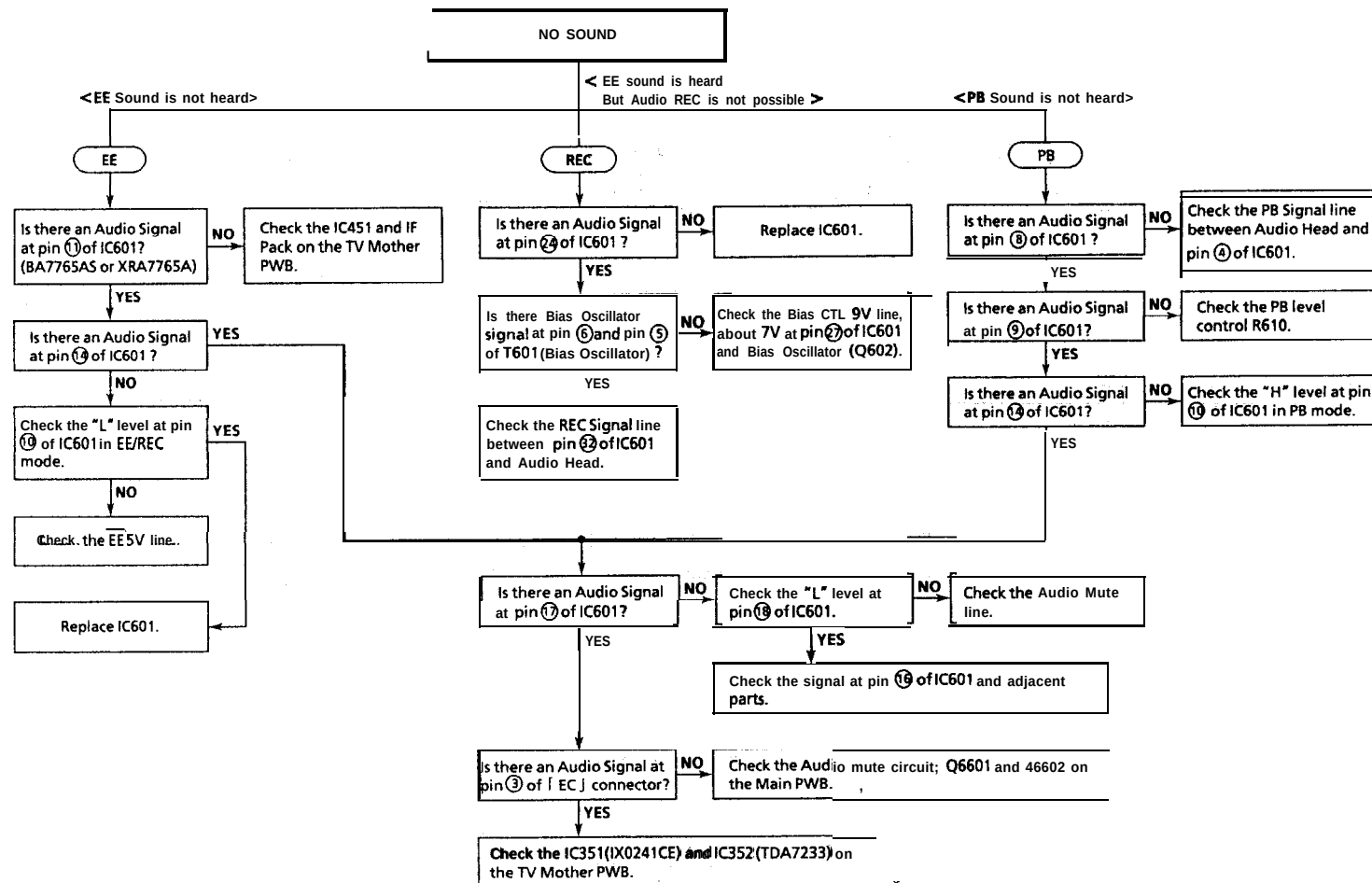
VCRE-E MODE TROUBLESHOOTING

FLOW CHART NO. 1-17



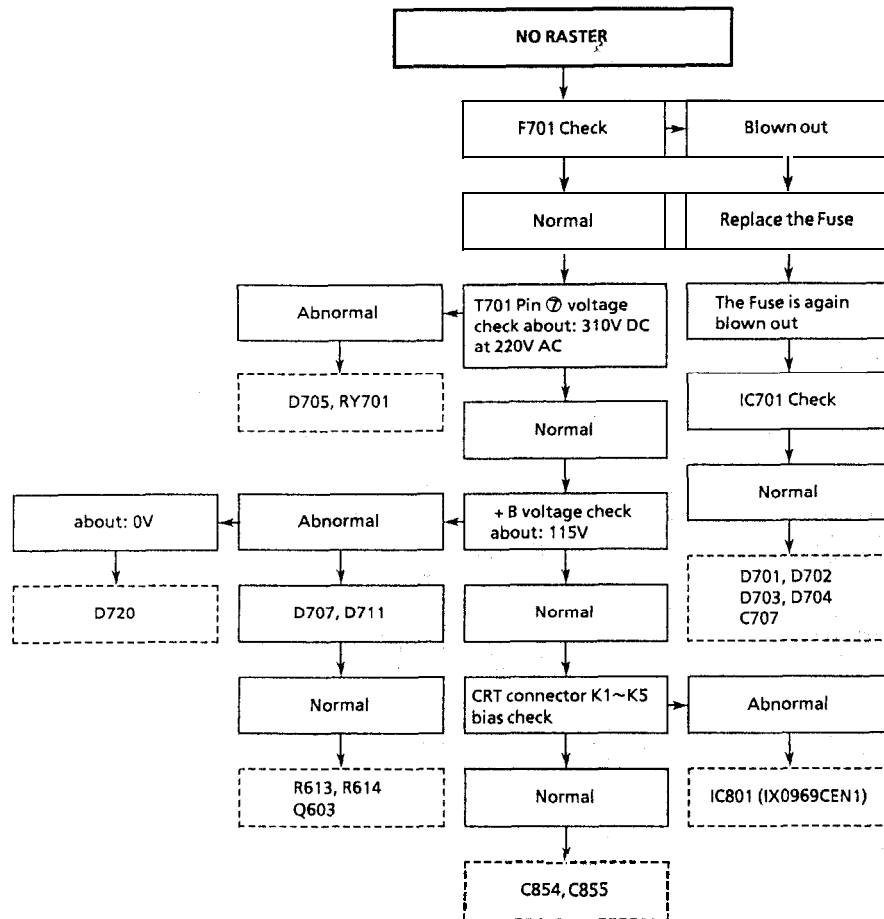
VCR SOUND TROUBLESHOOTING

FLOW CHART NO.1-18



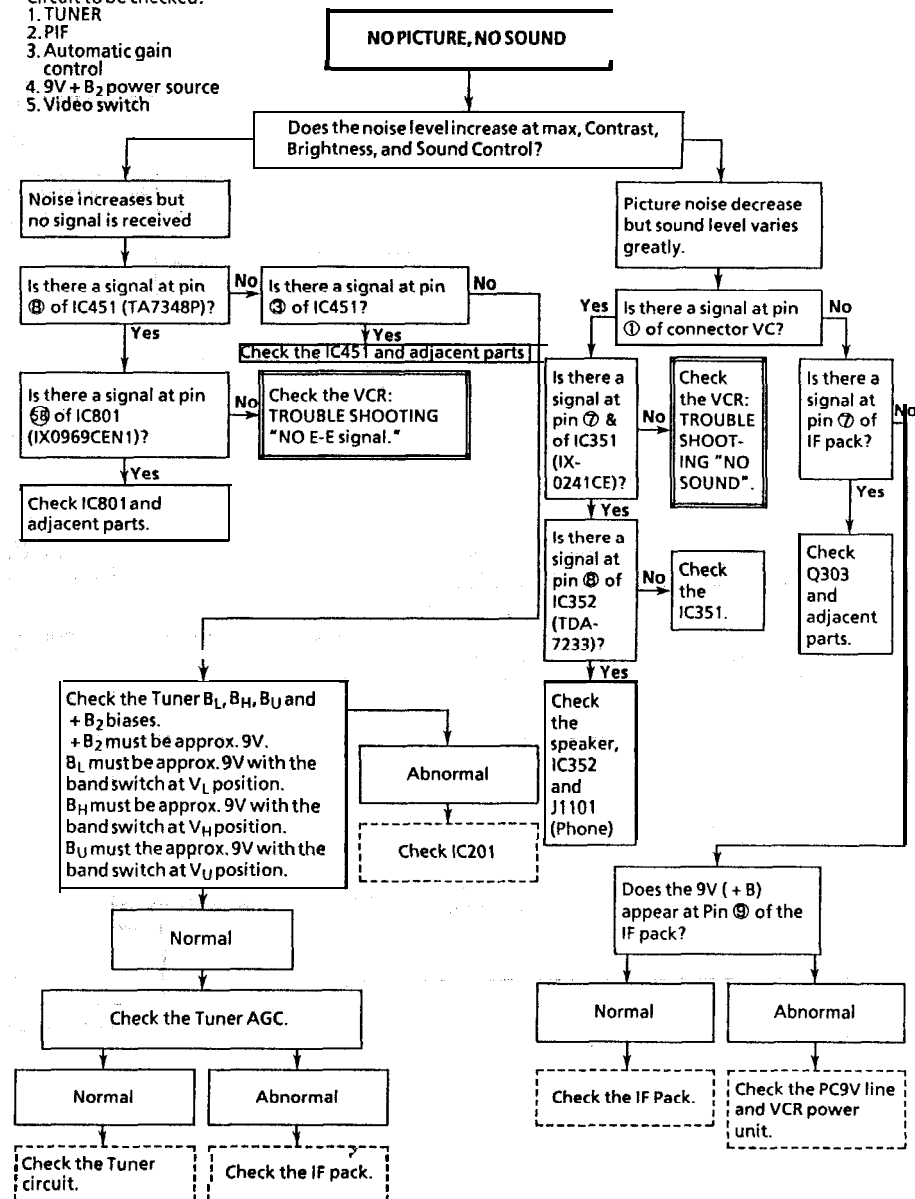
TV TROUBLE SHOOTING TABLE

FLOW CHART NO. 2-1



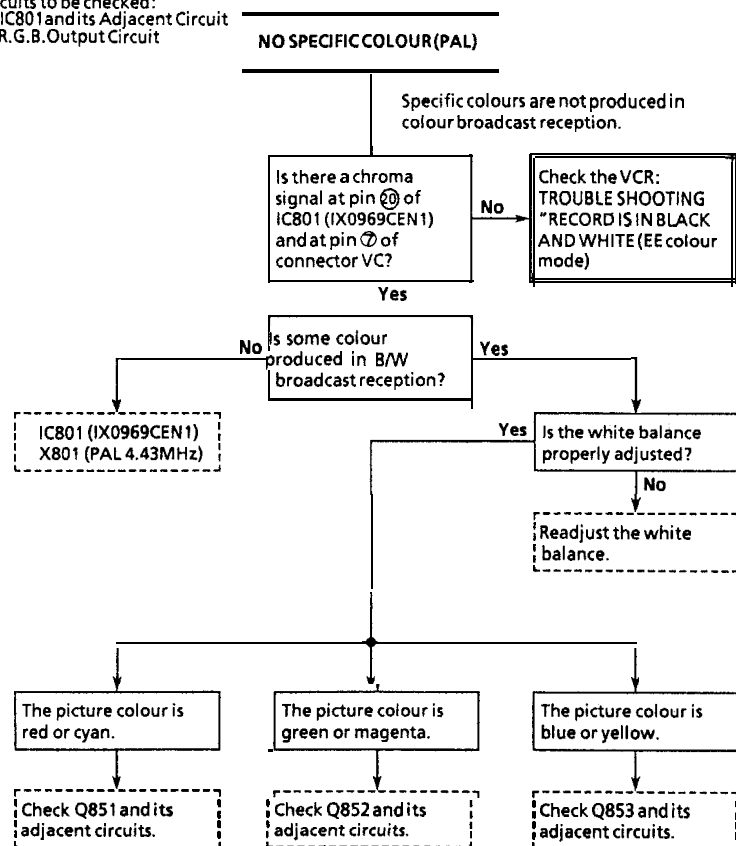
Circuit to be checked:
 1. TUNER
 2. PIF
 3. Automatic gain control
 4. 9V + B₂ power source
 5. Video switch

FLOW CHART NO. 2-2



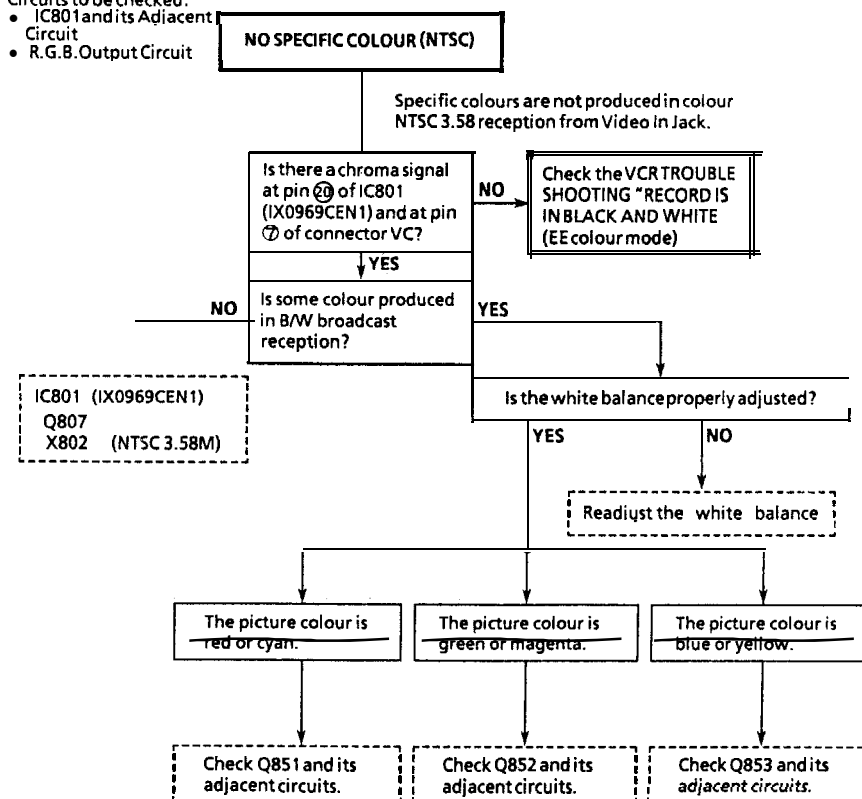
- Circuits to be checked:
- IC801 and its Adjacent Circuit
 - R.G.B. Output Circuit

FLOW CHART NO. 2-3

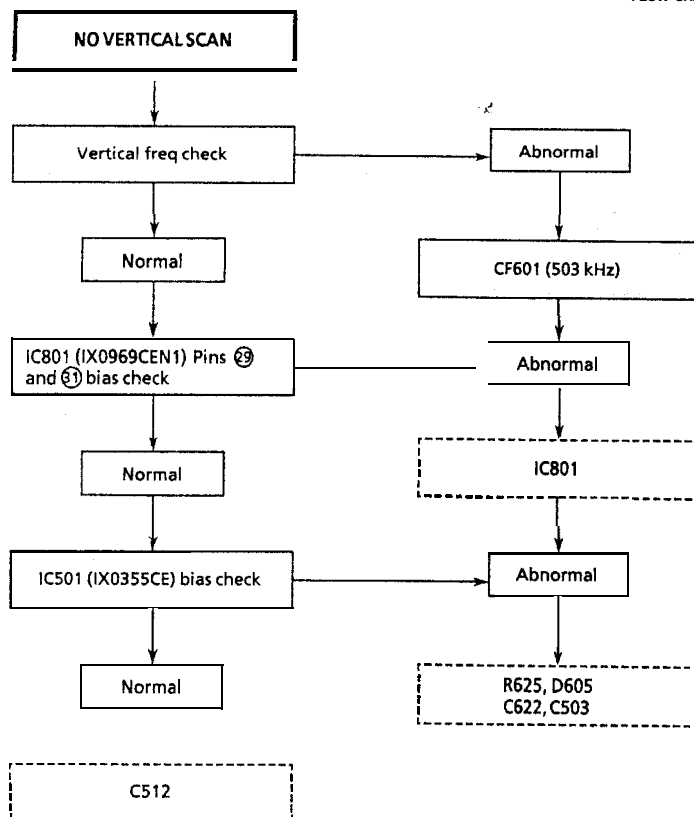


- Circuits to be checked:
- IC801 and its Adjacent Circuit
 - R.G.B. Output Circuit

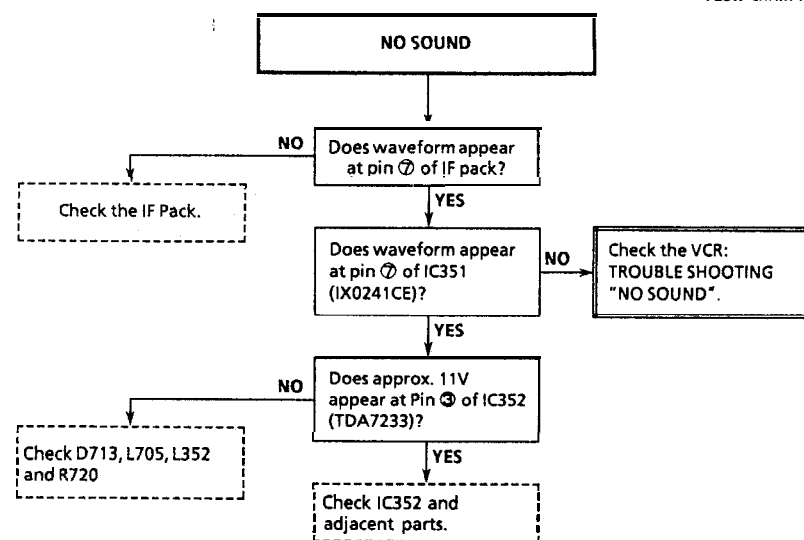
FLOW CHART NO. 2-4



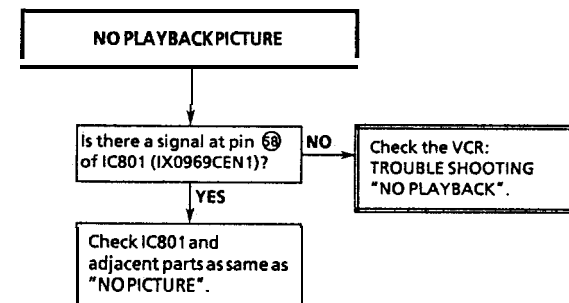
FLOW CHART NO. 2-5



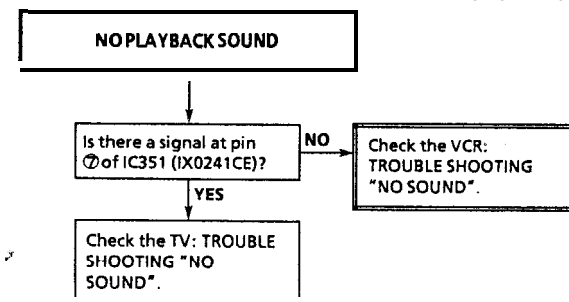
FLOW CHART NO. 2-6



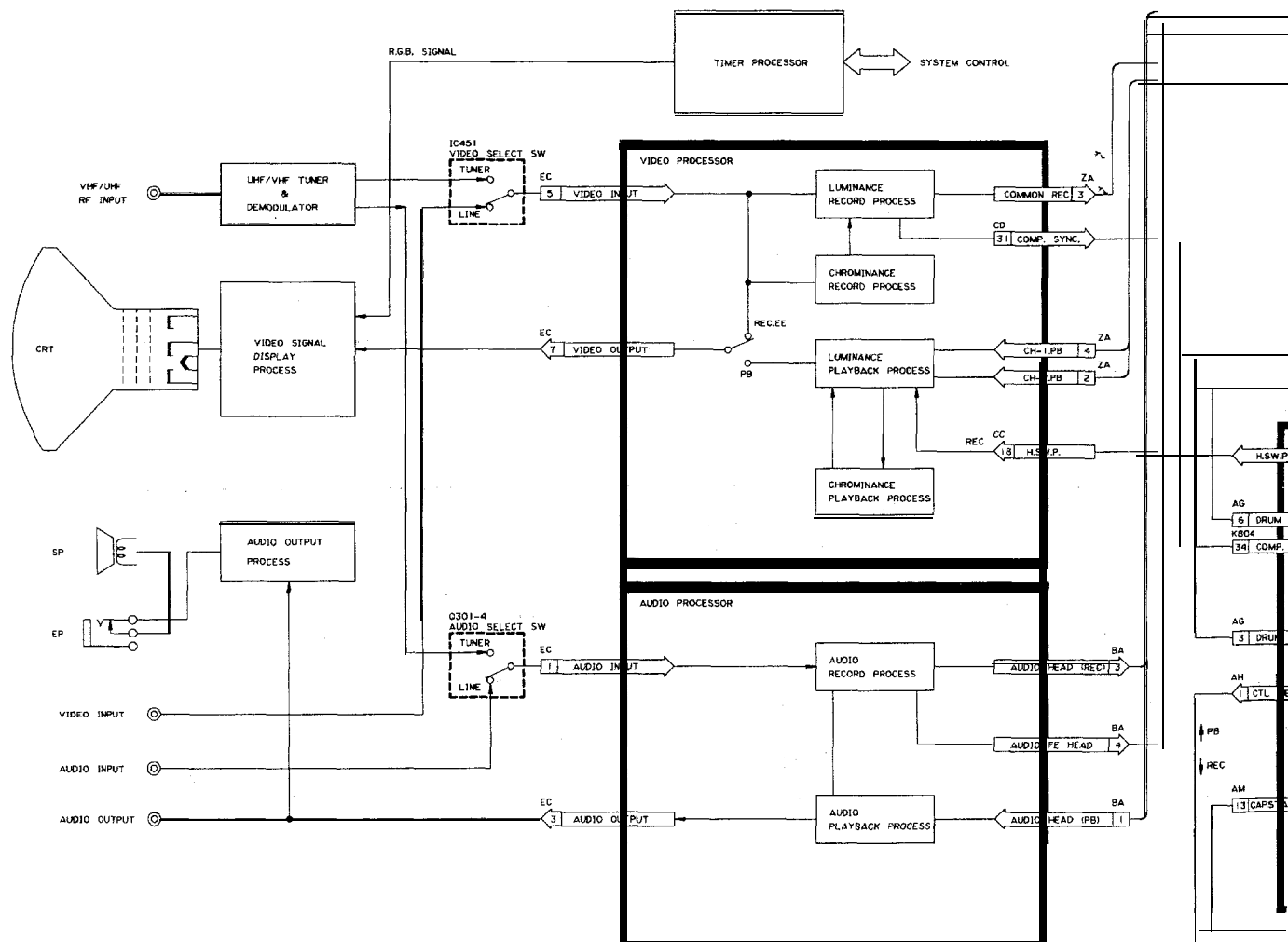
FLOW CHART NO. 2-7

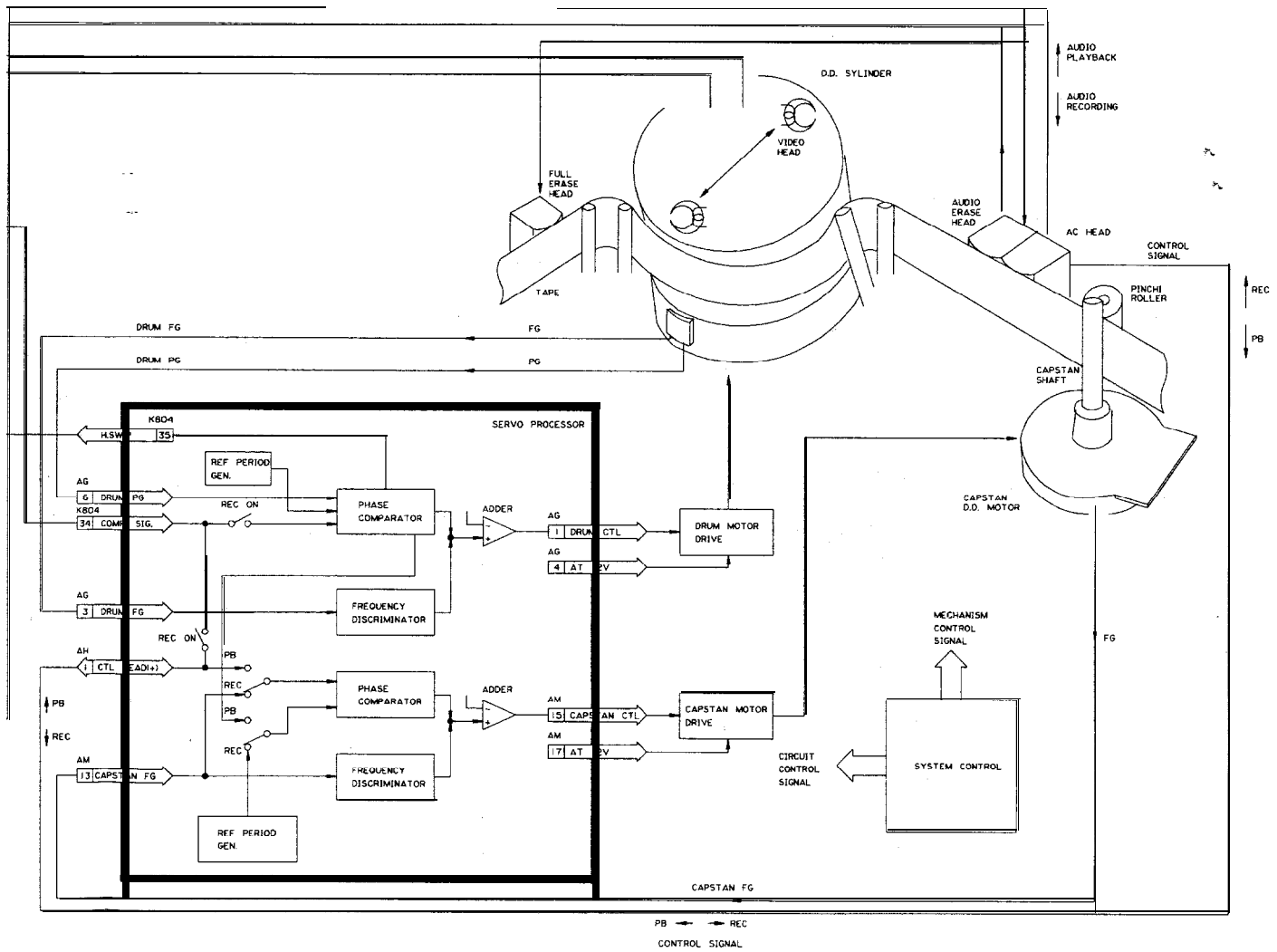


FLOW CHART NO. 2-8

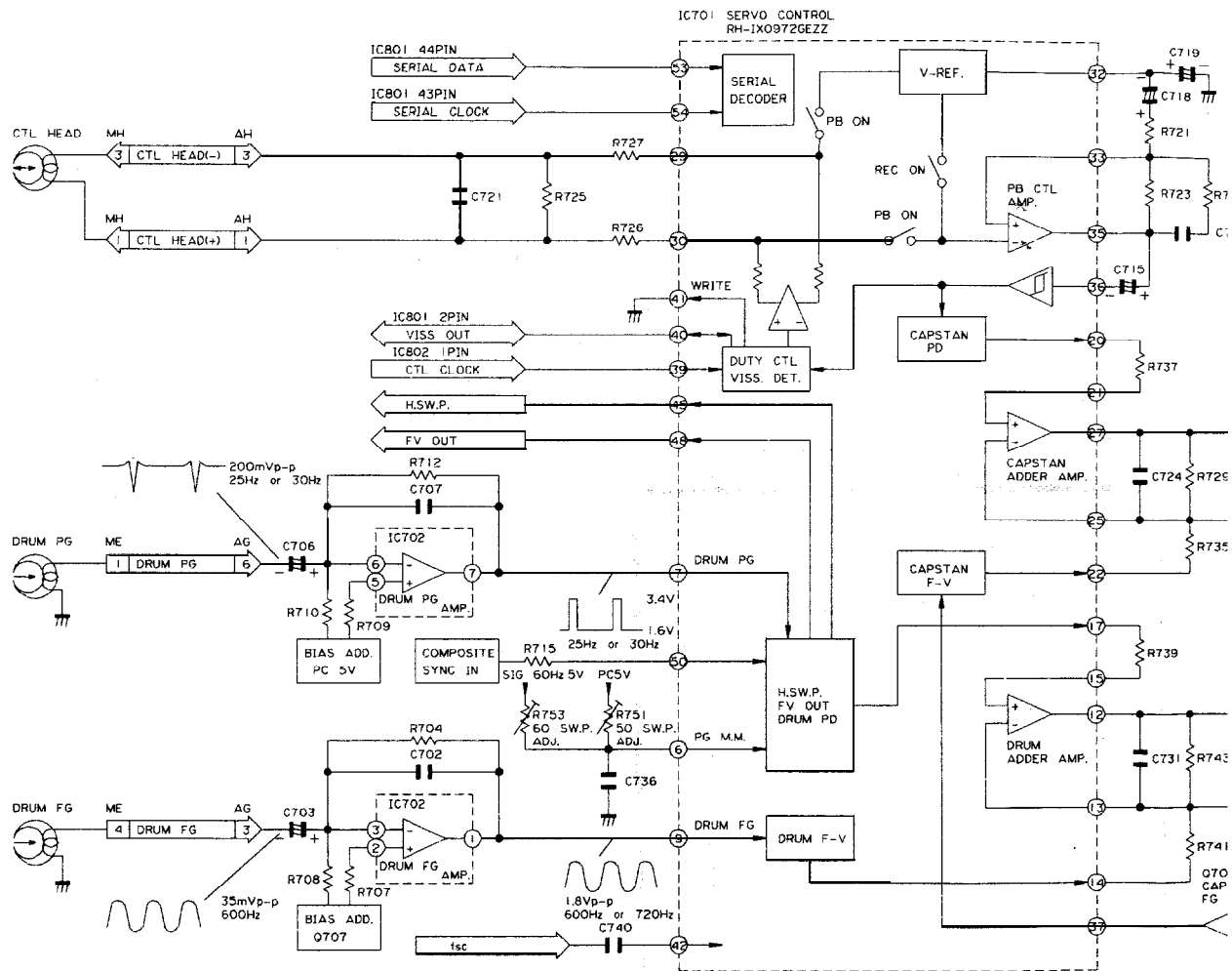


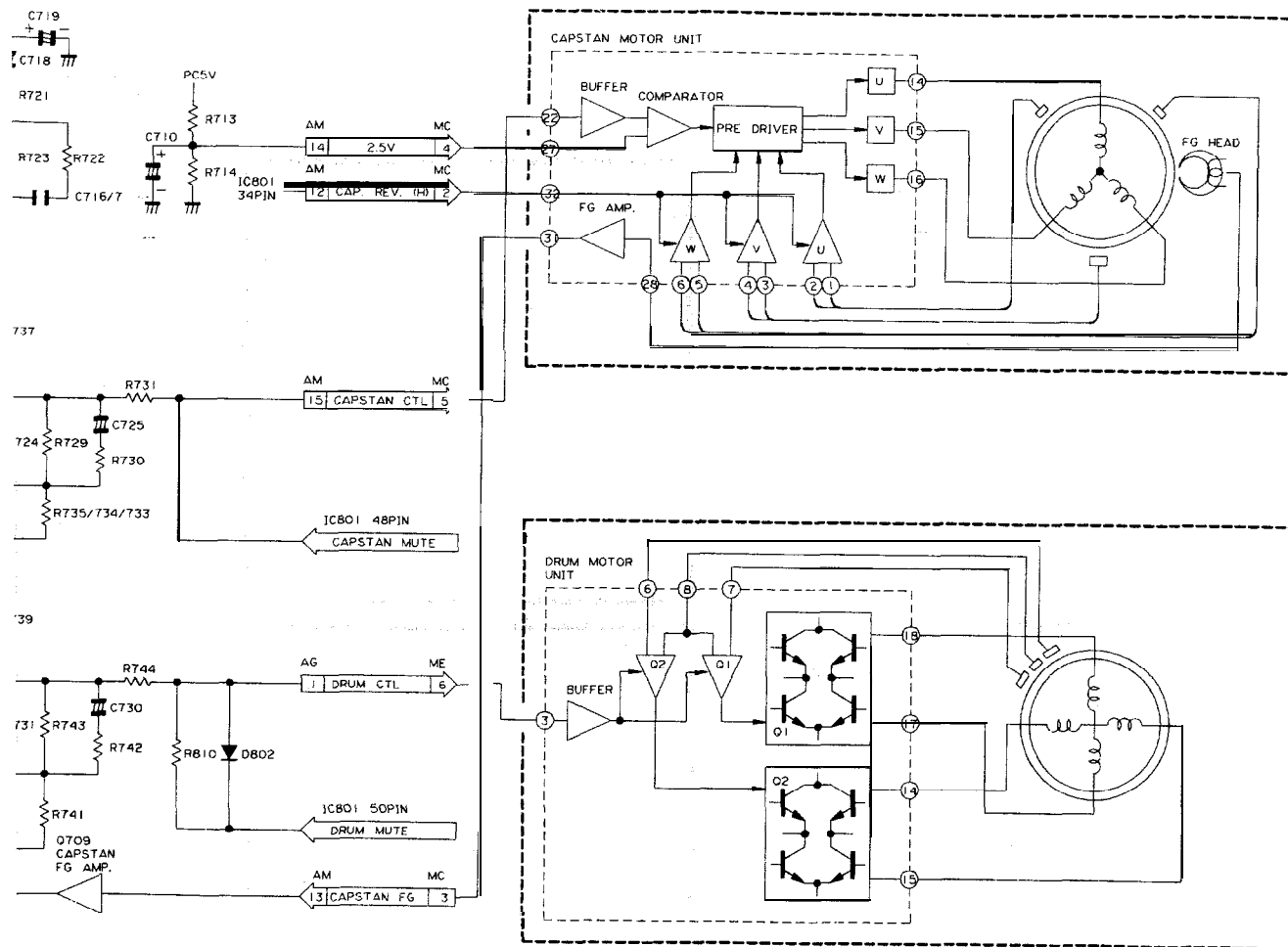
OVERALL BLOCK DIAGRAM



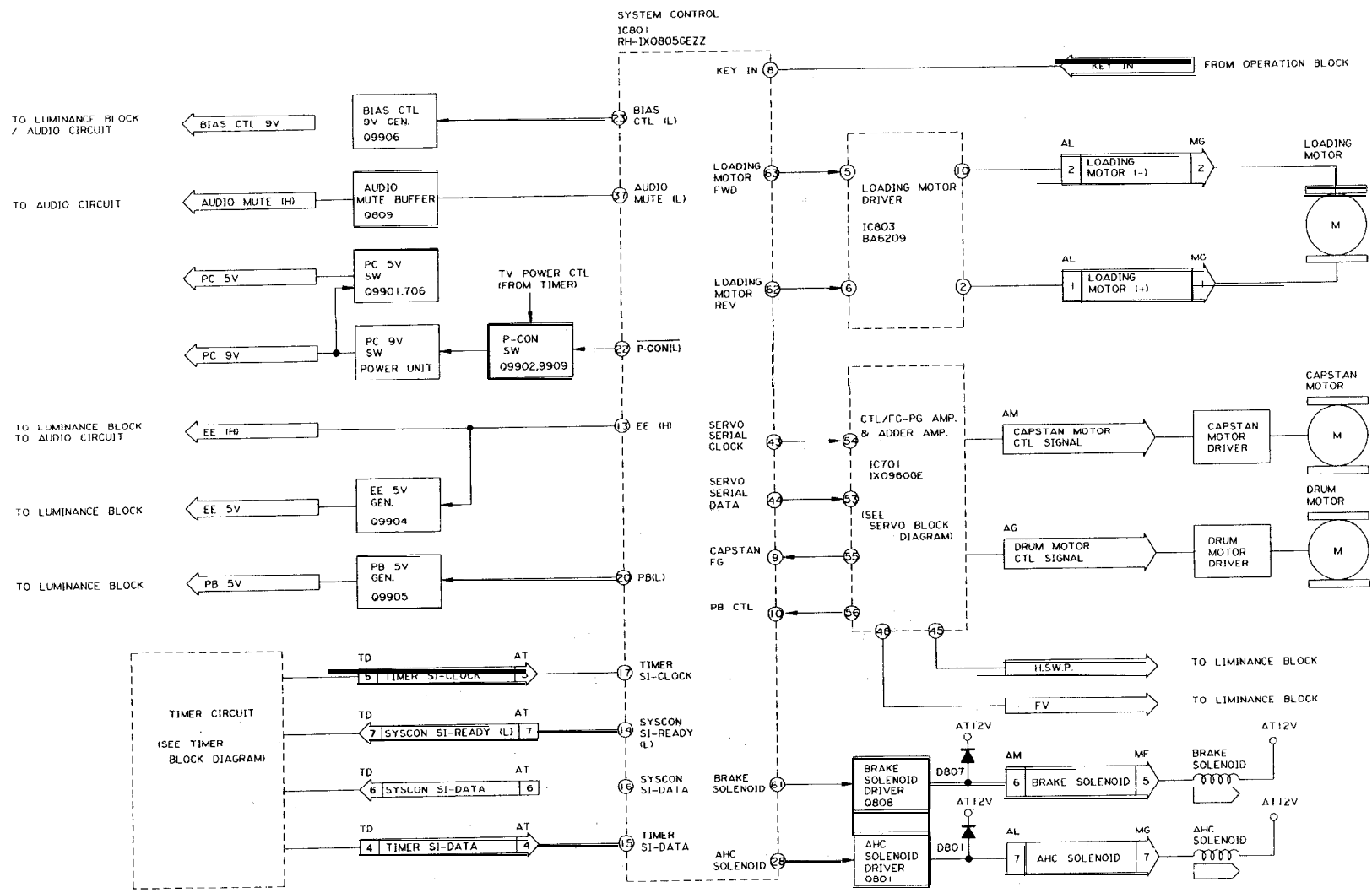


SERVO PROCESS BLOCK DIAGRAM

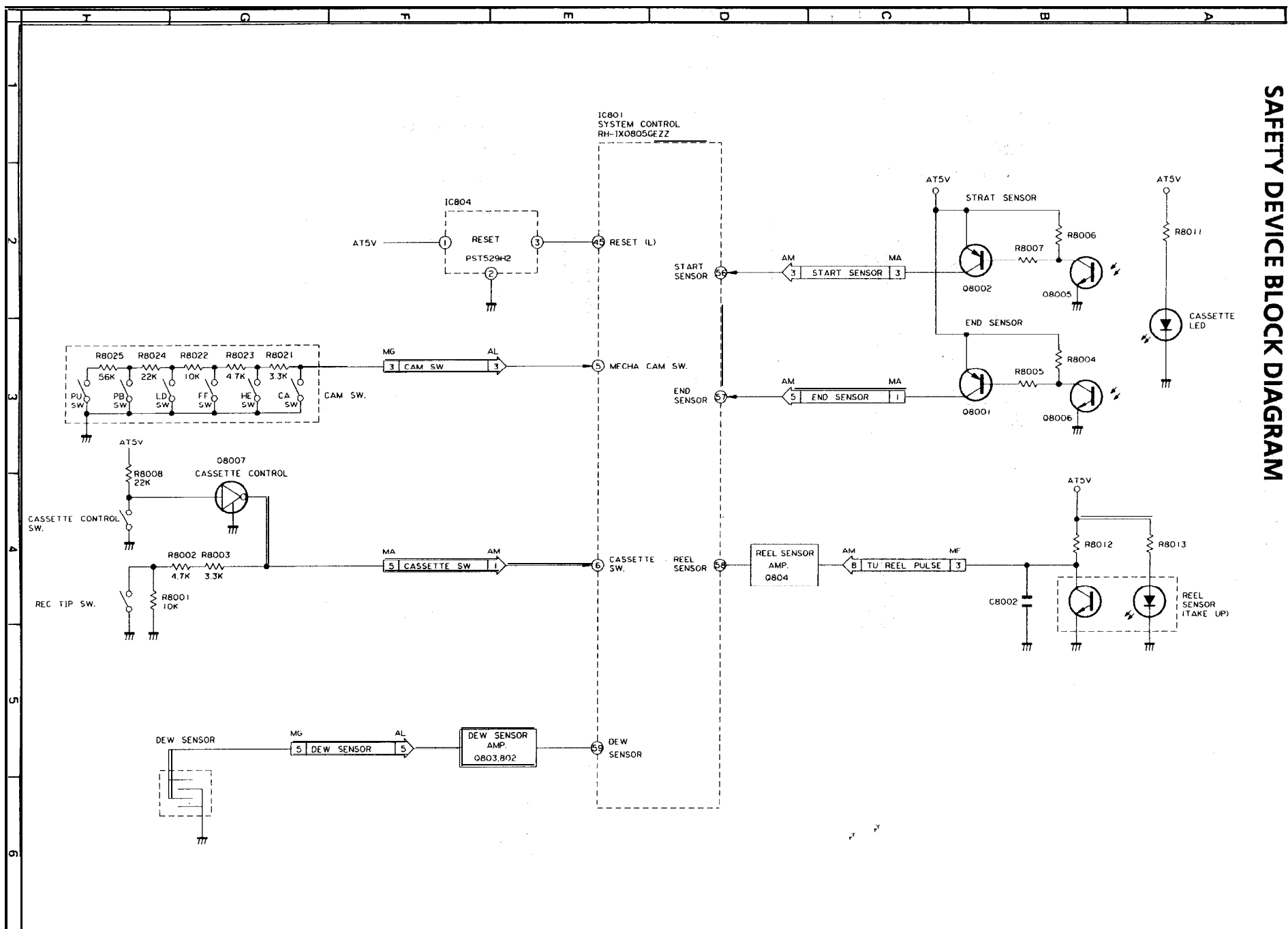




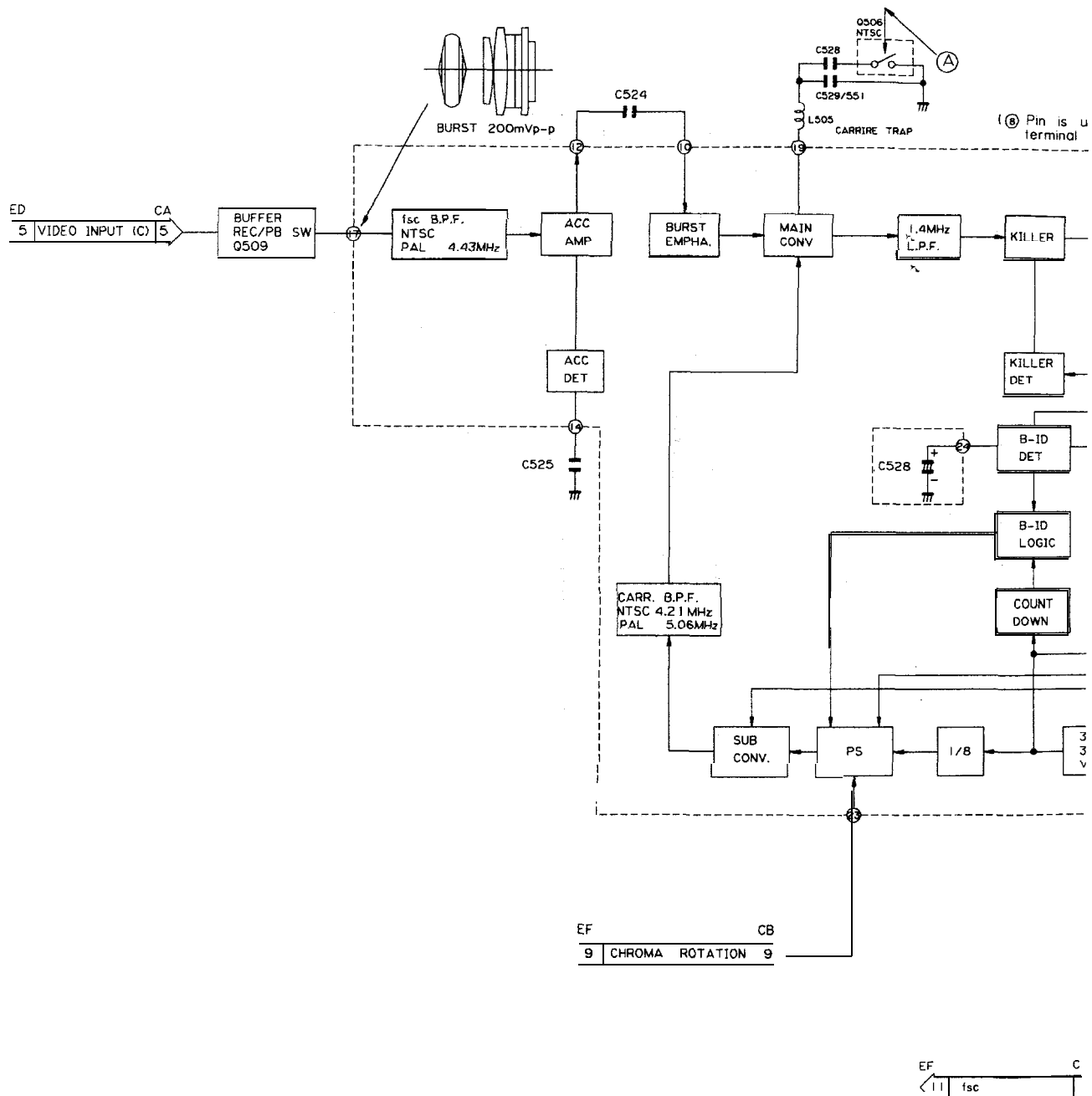
SYSTEM CONTROL BLOCK DIAGRAM

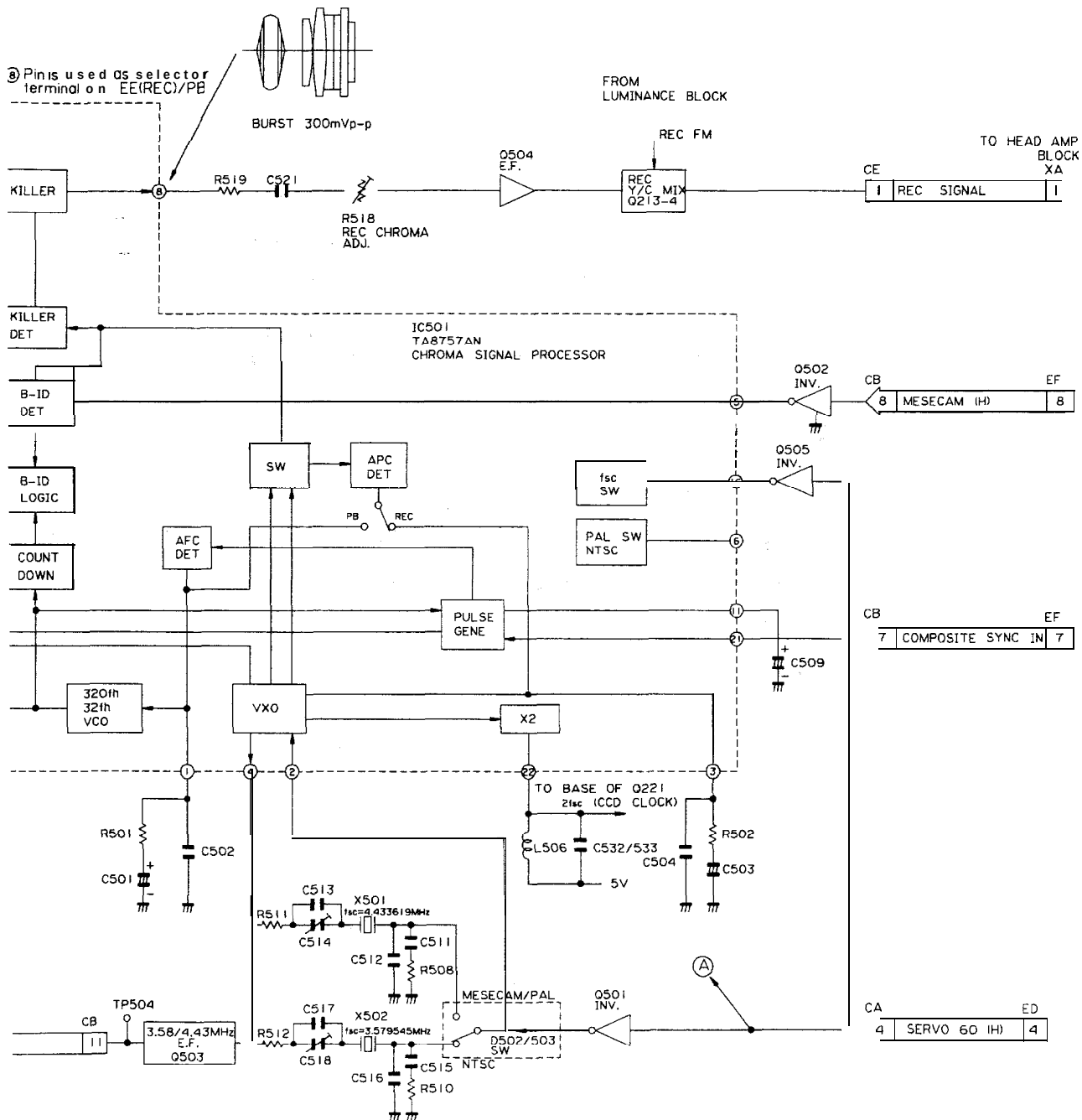


SAFETY DEVICE BLOCK DIAGRAM

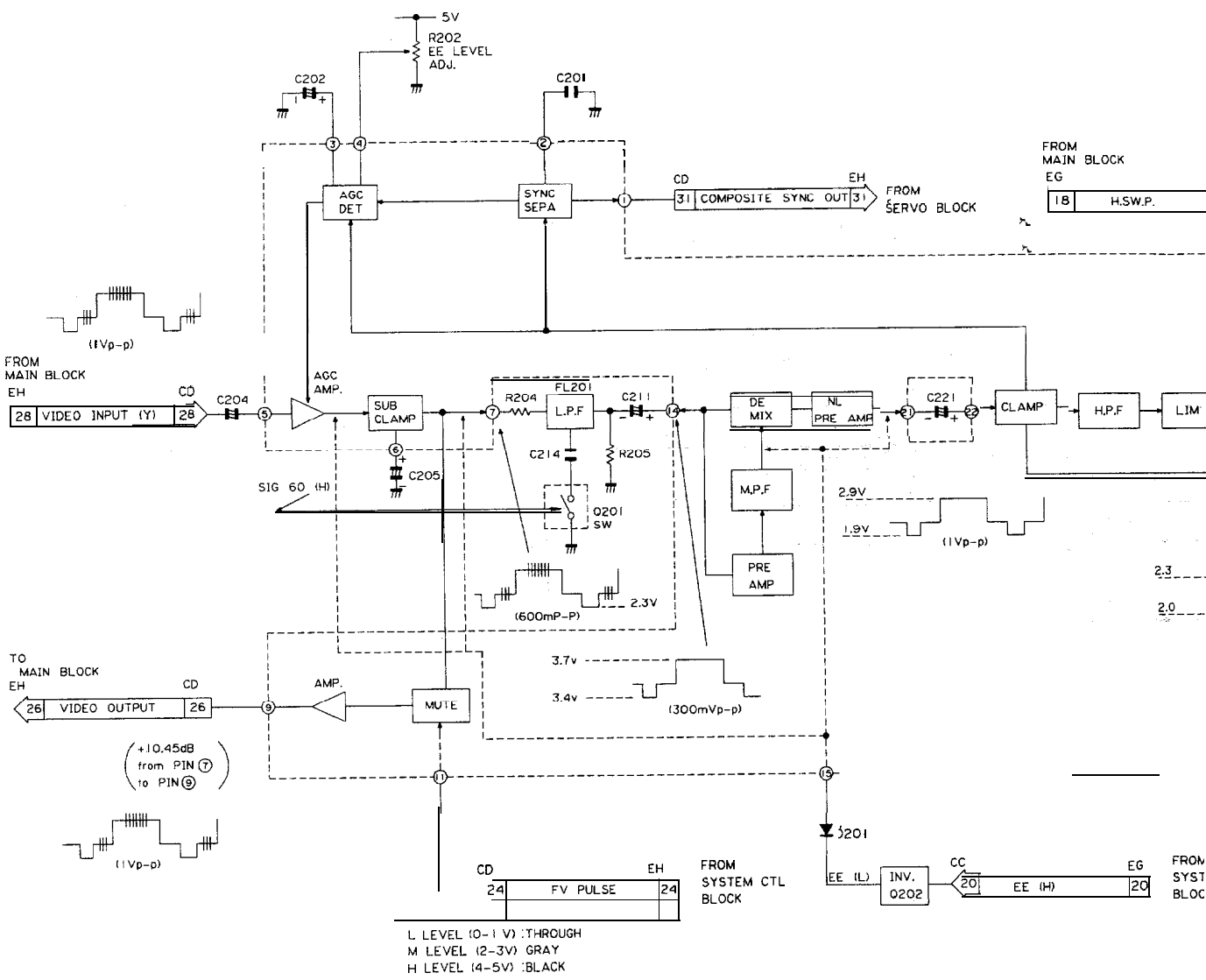


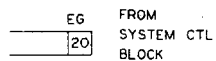
RECORDING CHROMA BLOCK DIAGRAM



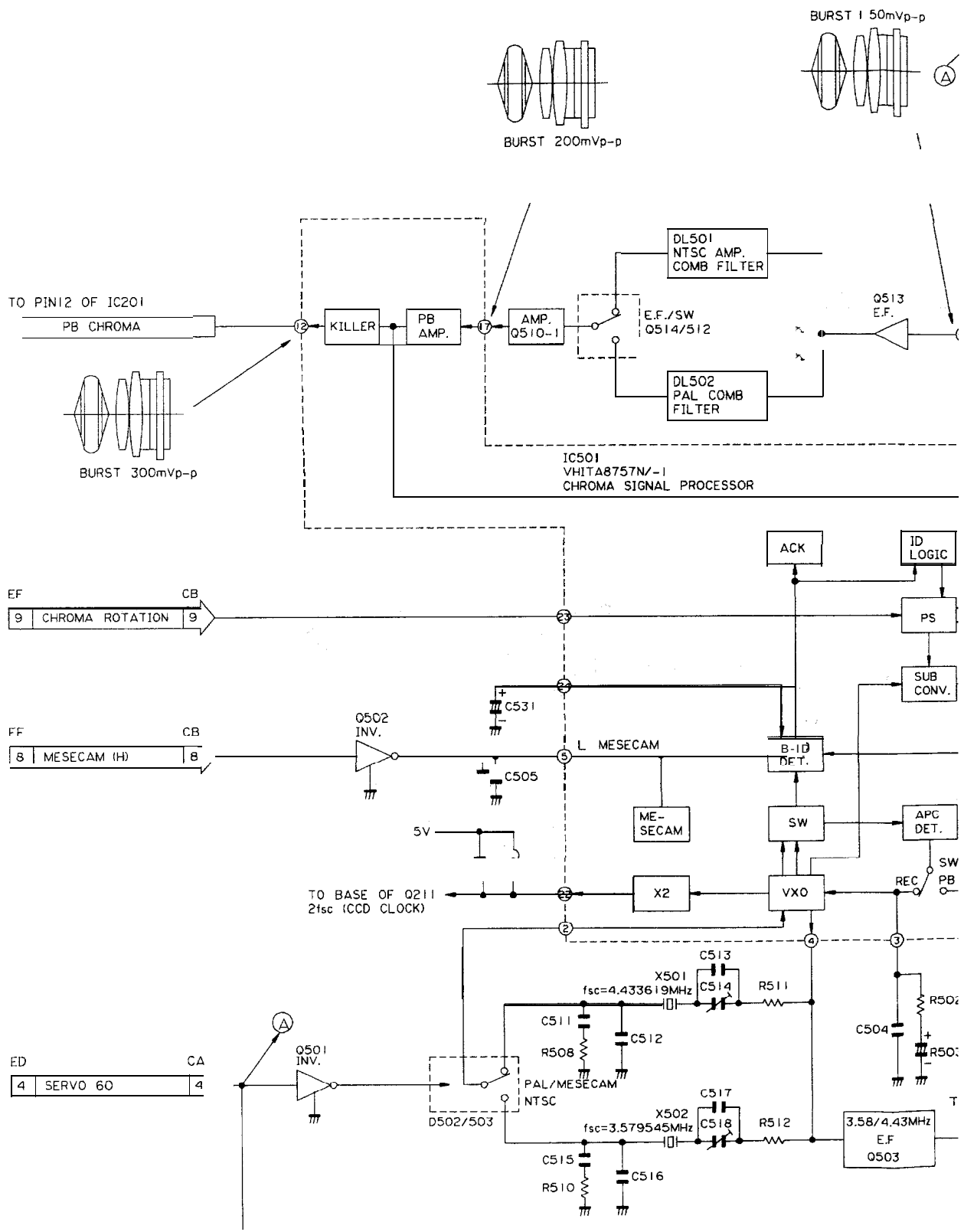


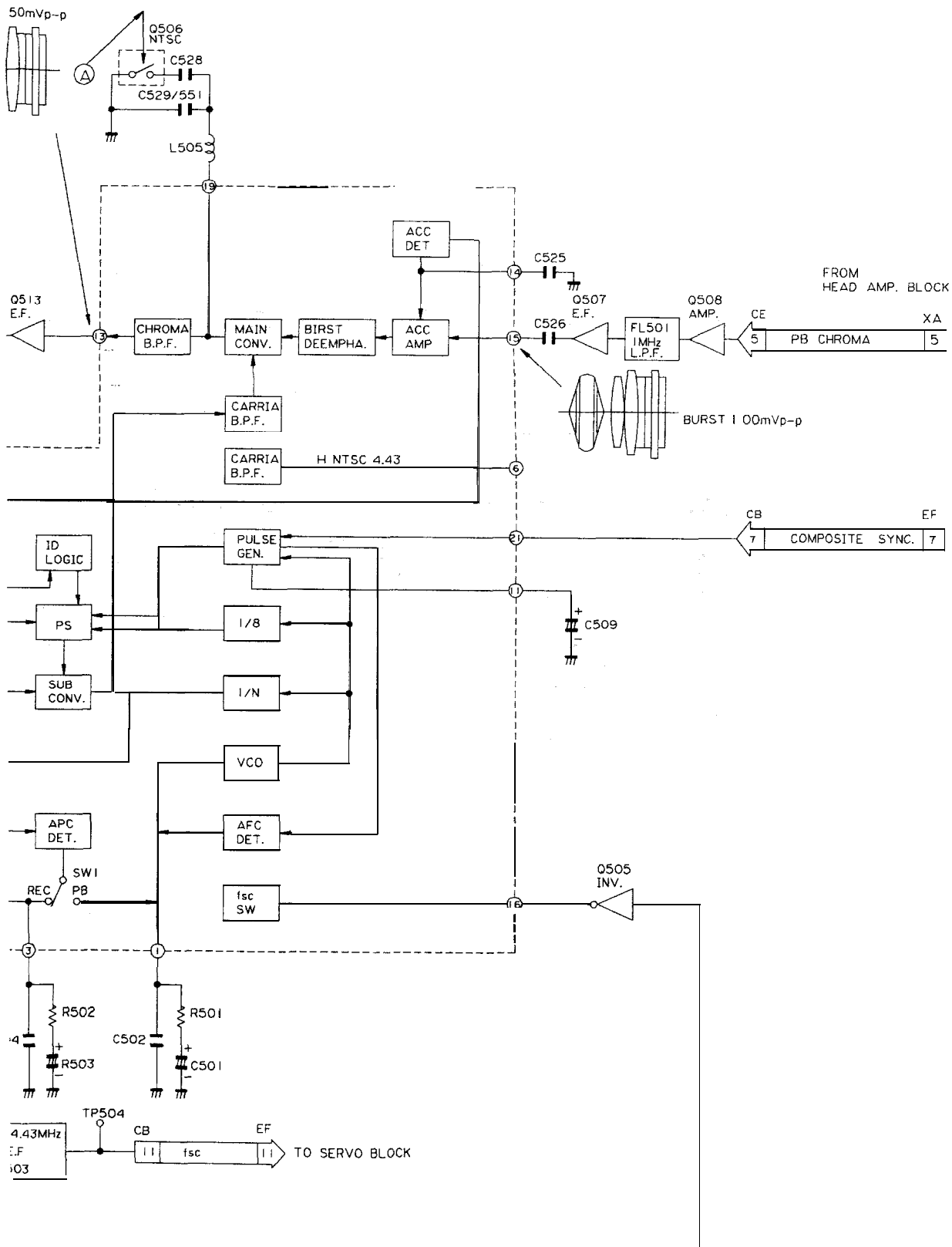
RECORDING LUMINANCE BLOCK DIAGRAM



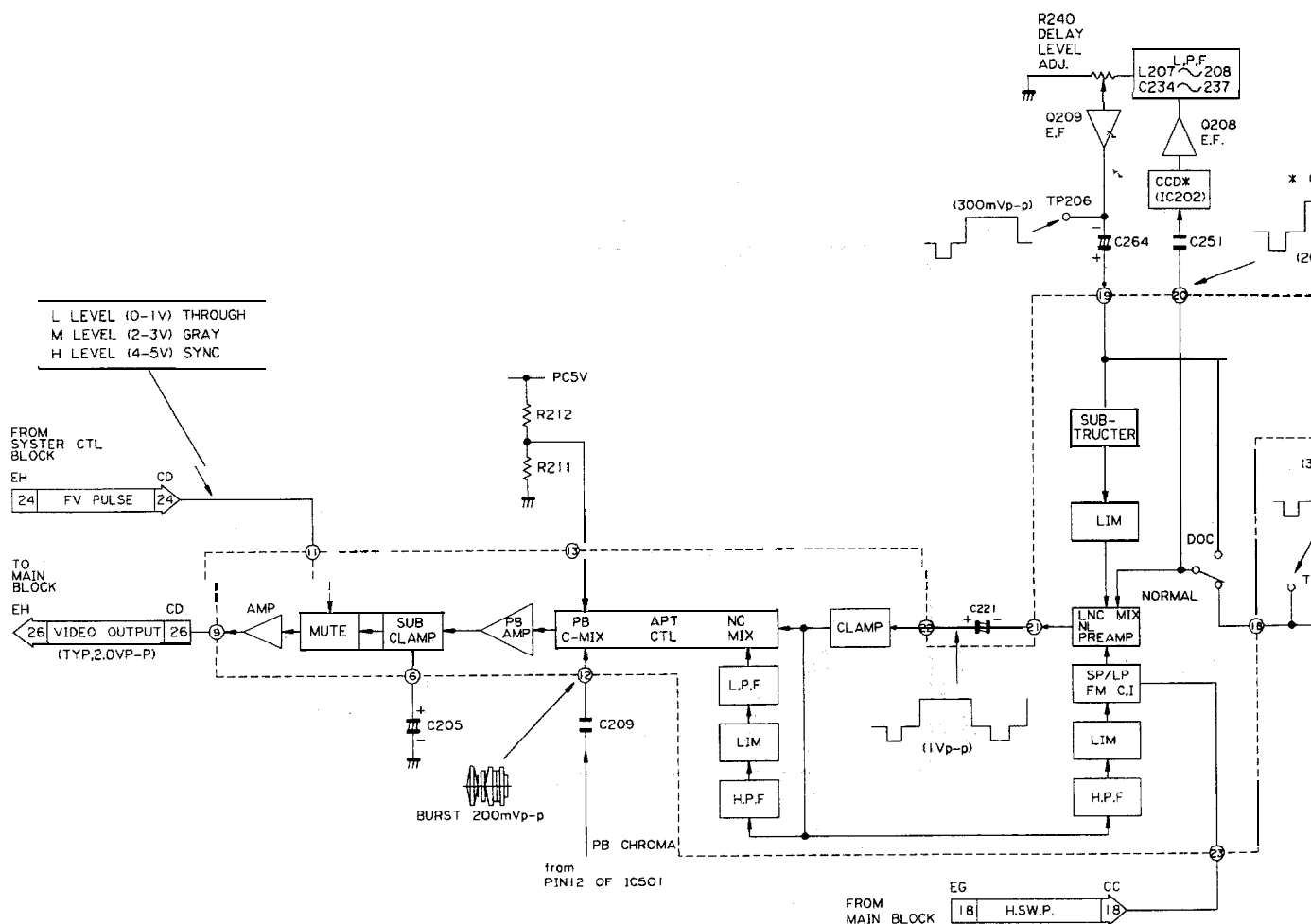


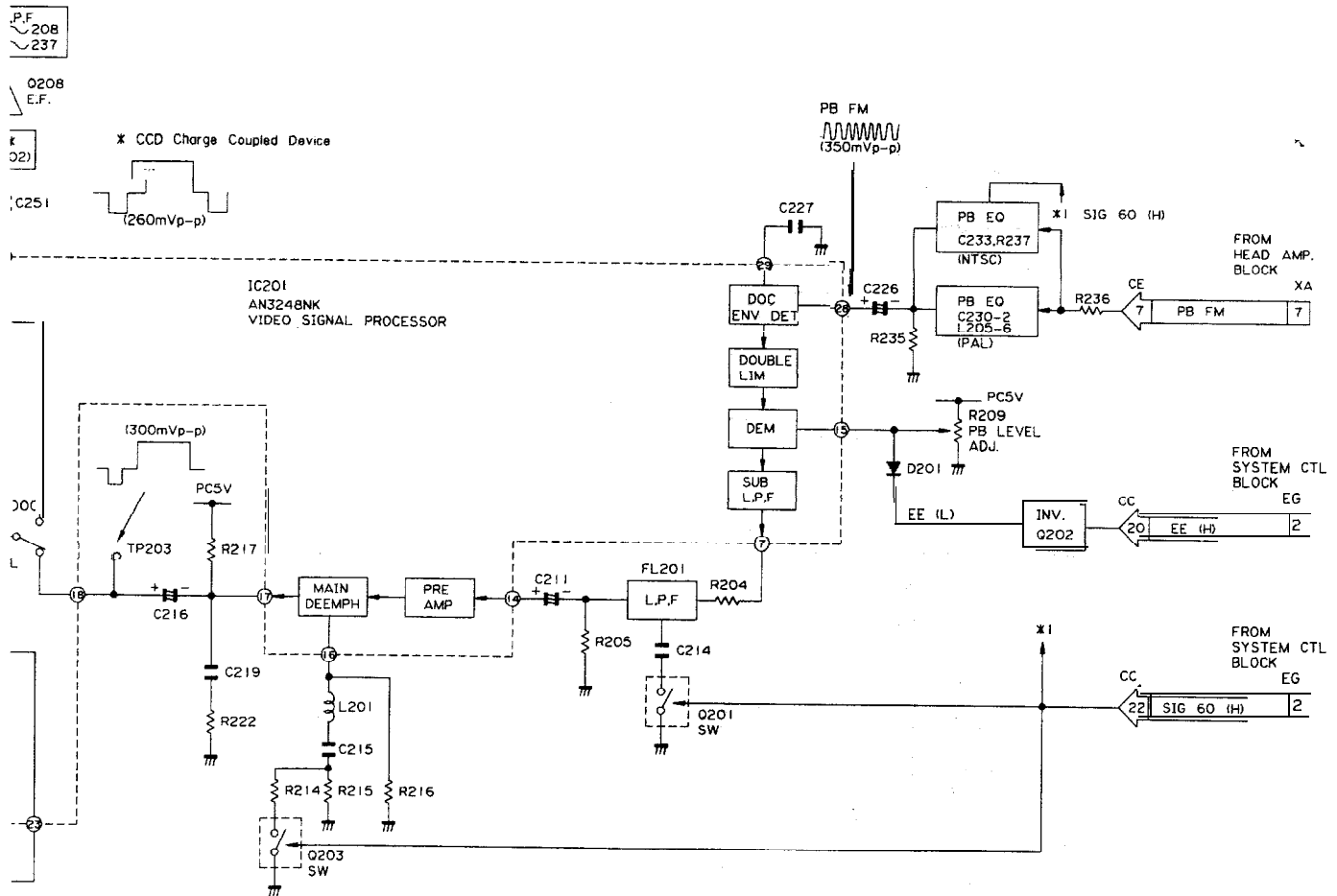
PLAYBACK CHROMINANCE BLOCK DIAGRAM



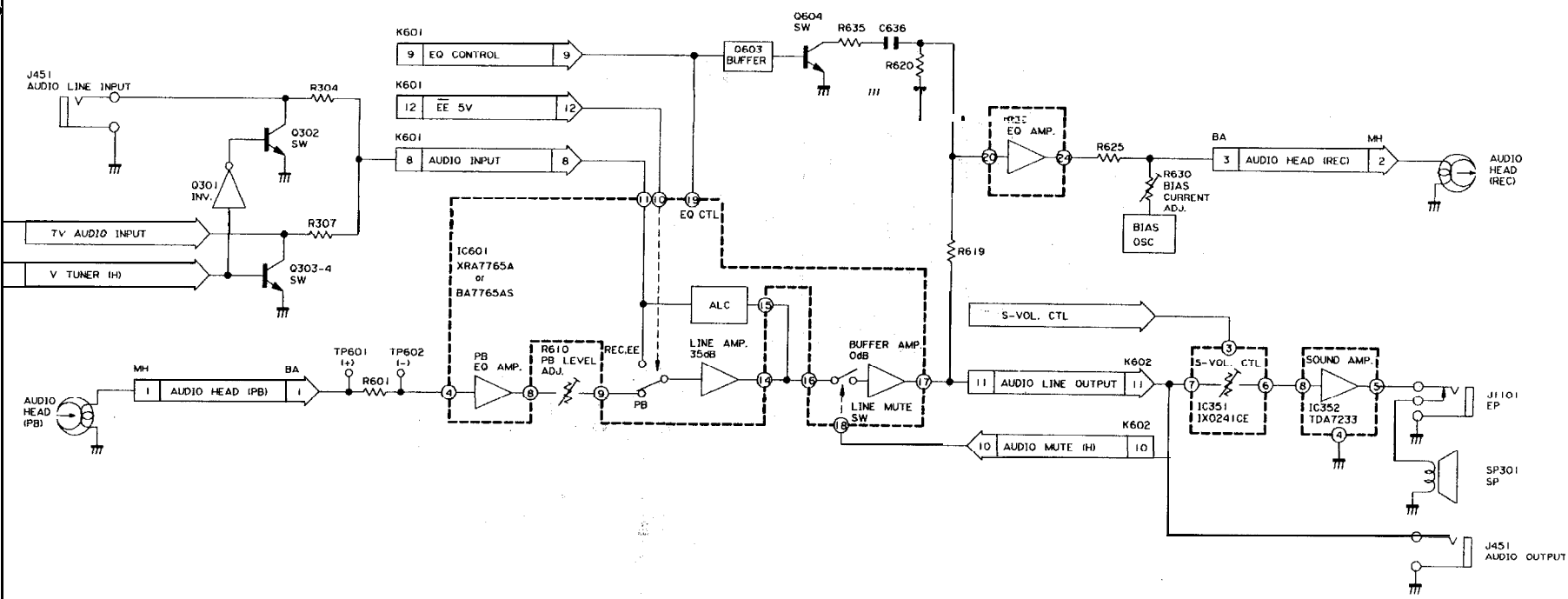


PLAYBACK LUMINANCE BLOCK DIAGRAM



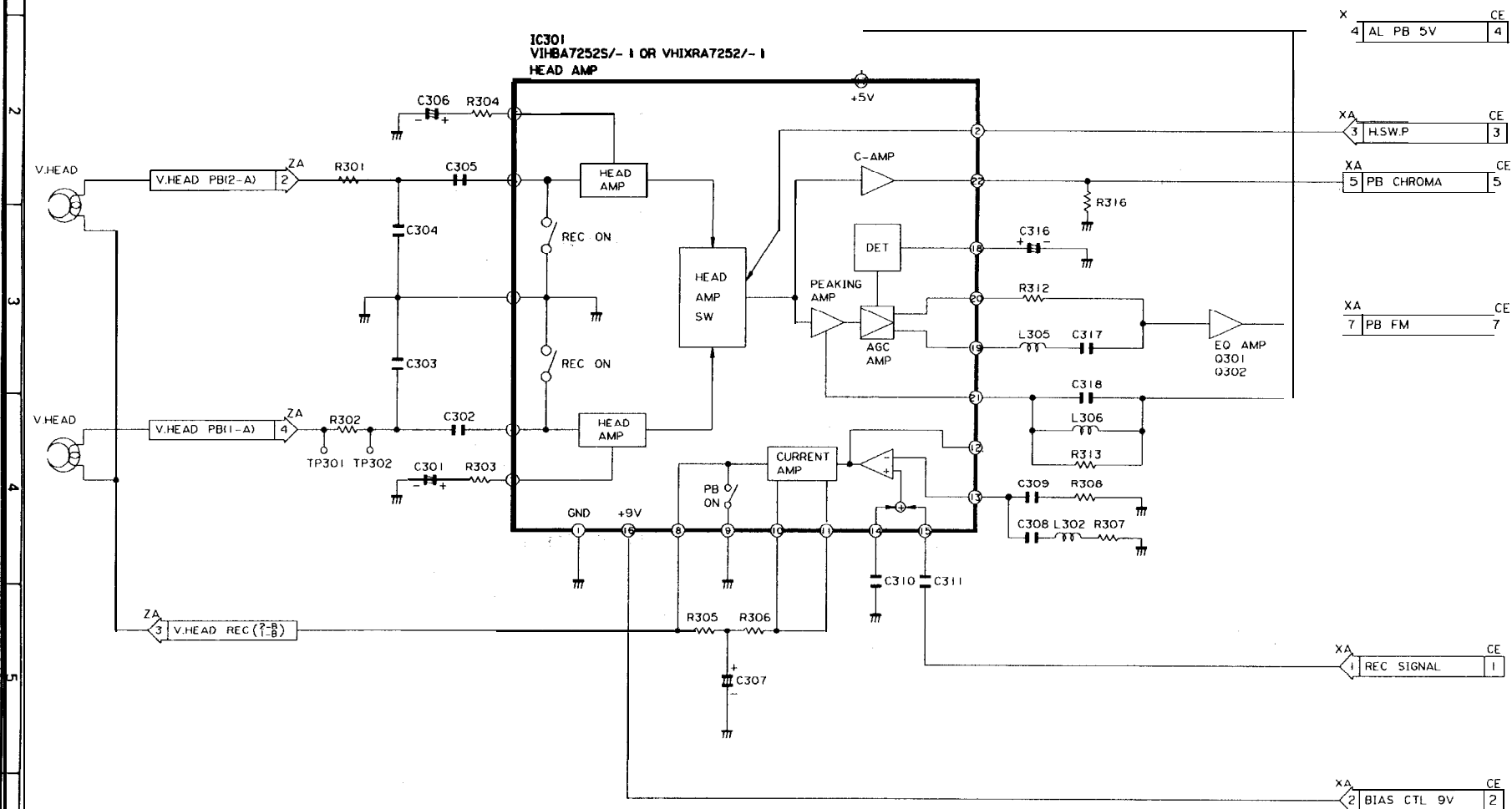


AUDIO BLOCK DIAGRAM

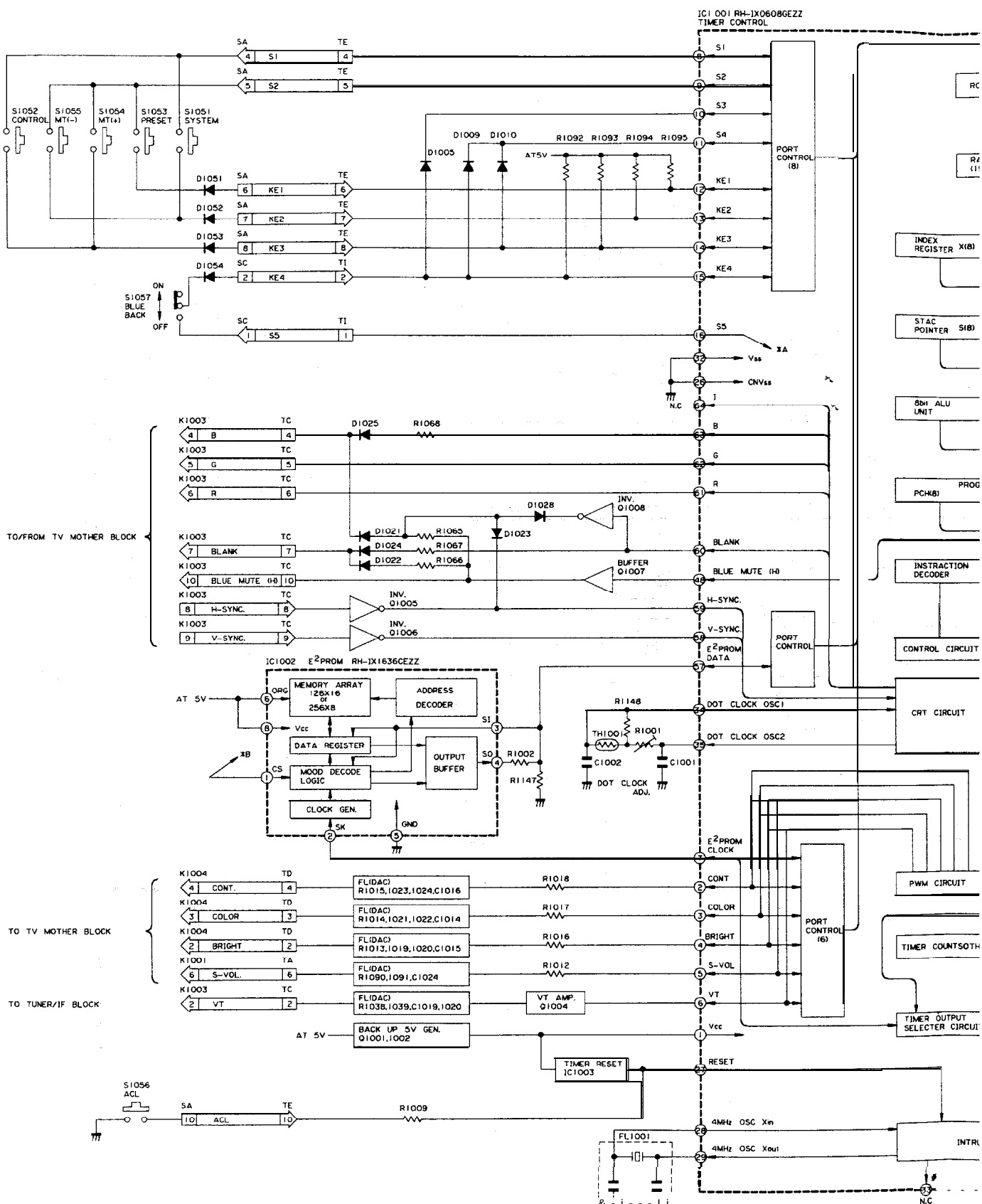


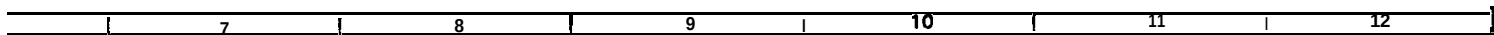
14VT10X1

HEAD AMP BLOCK DIAGRAM

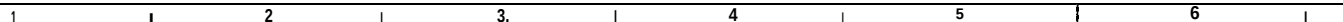


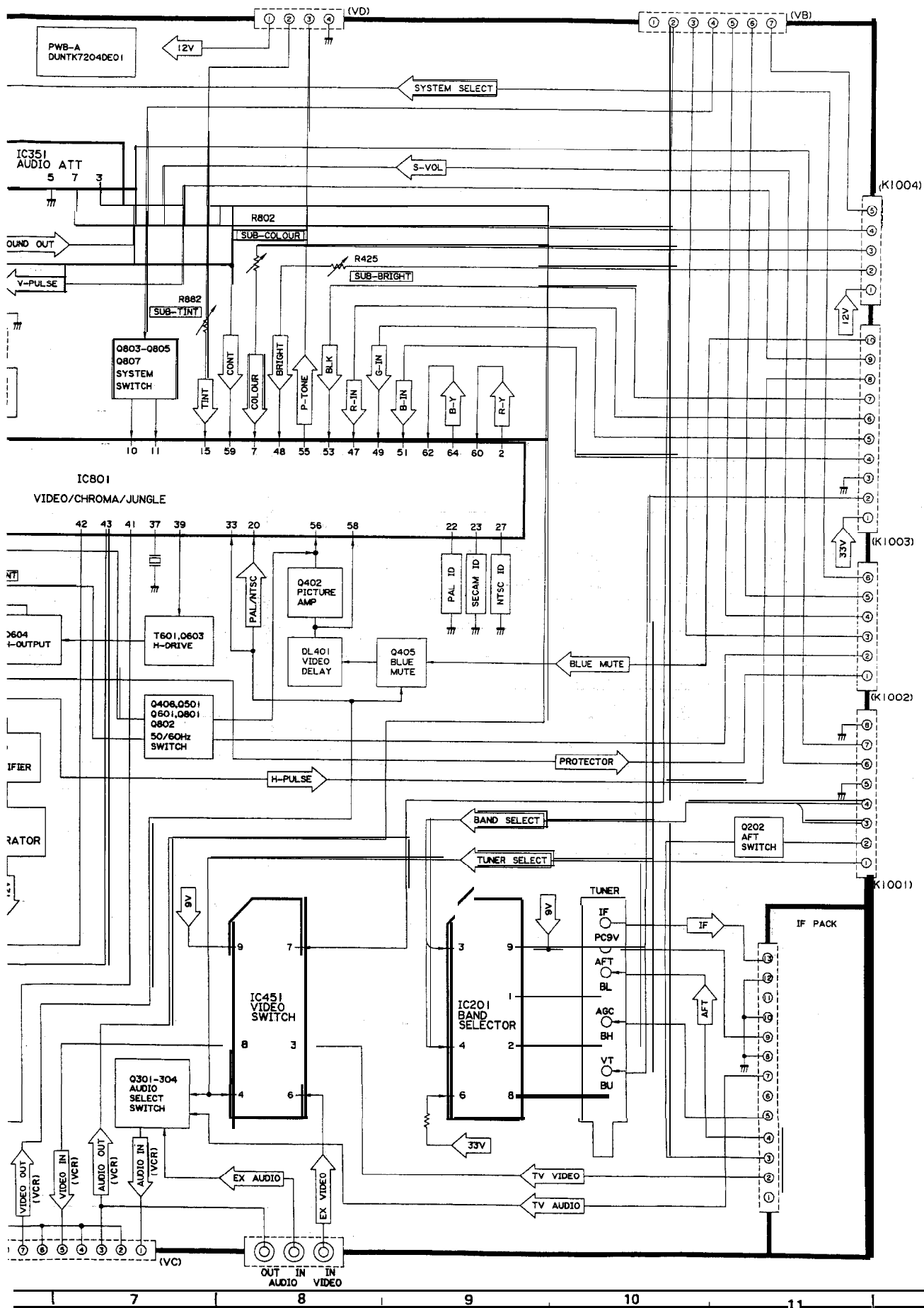
TIMER BLOCK DIAGRAM





B
C
D
E
F
G
H





SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE:

BE SURE TO USE GENUINE PARTS FOR SECURING THE SAFETY AND RELIABILITY OF THE SET. PARTS MARKED WITH "△" AND PARTS SHADED (IN BLACK) ARE ESPECIALLY IMPORTANT FOR MAINTAINING THE SAFETY AND PROTECTING ABILITY OF THE SET.

BE SURE TO REPLACE THEM WITH PARTS OF SPECIFIED PART NUMBER.

SAFETY NOTES:

1. DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.
2. SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CASSIS IS OPERATING.

NOTES:

1. The unit of resistance "ohm" is omitted ($k = 1000 \text{ ohm}$, $M = 1 \text{ Meg ohm}$).
2. All resistors are 1/8 watt, unless otherwise noted.
3. The unit of capacitance "F" is omitted ($\mu = \mu F$, $p = pF$).
4. The values in parentheses are the ones in the PB mode; the values without parentheses are the ones in the REC mode.

VOLTAGE MEASUREMENT CONDITIONS:

1. DC voltages are measured between points indicated and chassis ground by VTVM, with AC230/240V, 50Hz supplied to unit and all controls are set to normal viewing picture unless otherwise noted.
2. Voltages are measured with $10000\mu V$ B & W or colour signal.

WAVEFORM MEASUREMENT CONDITIONS:

$10000\mu V$ 87.5 percent modulated colour bar signal is fed into tuner.

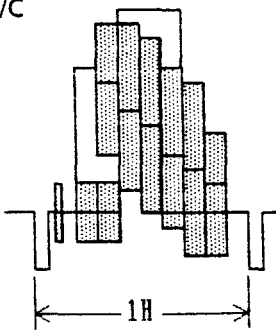
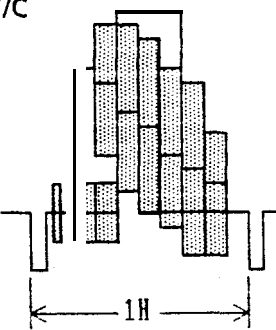
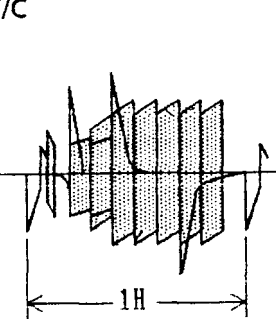
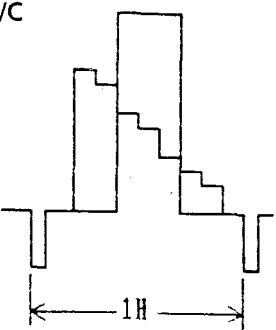
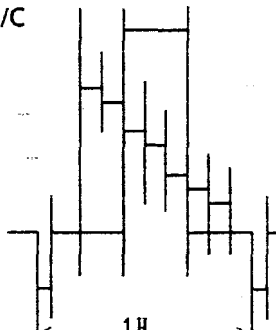
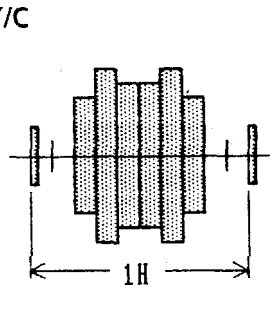
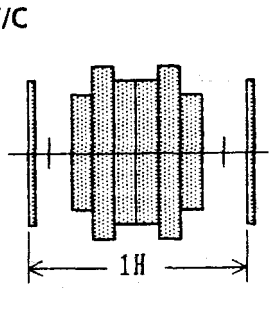
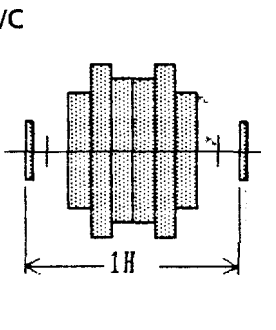
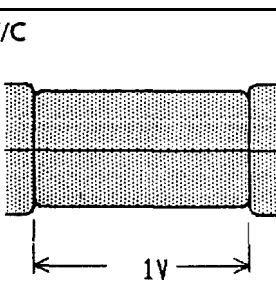
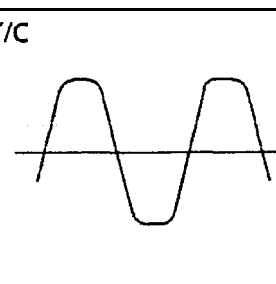
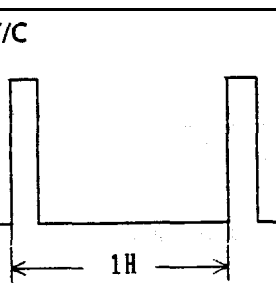
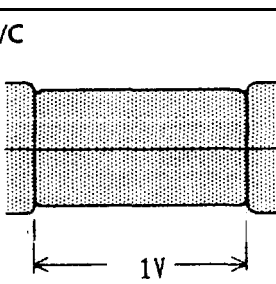
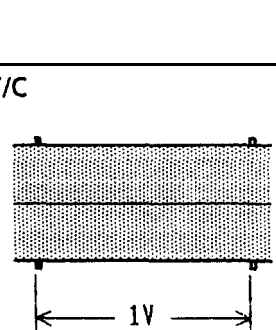
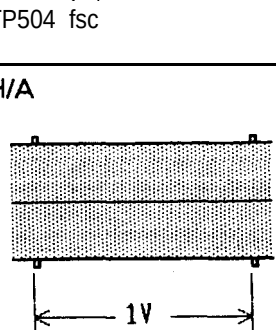
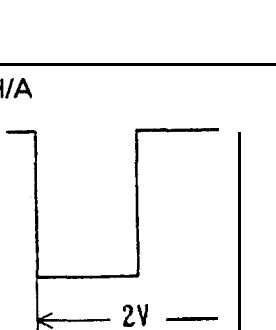
CAUTION:

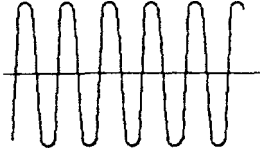
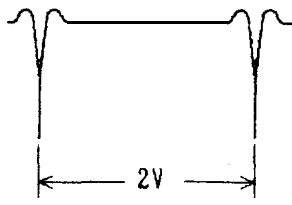
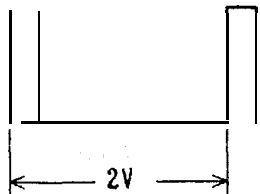
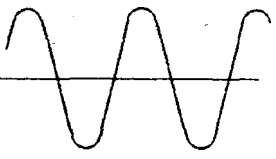
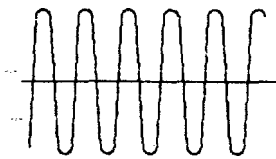
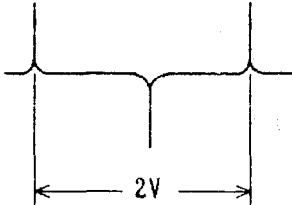
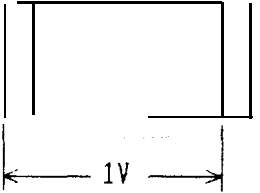
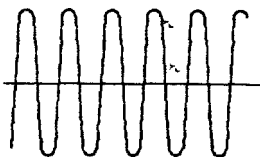
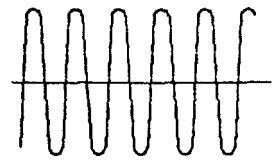
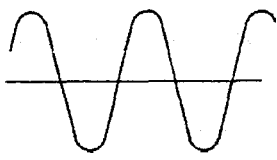
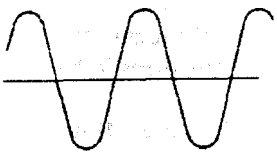
This circuit diagram is original one. Therefore there may be a slight difference from yours.

SIGNAL FLOW SYMBOLS AT A GLANCE

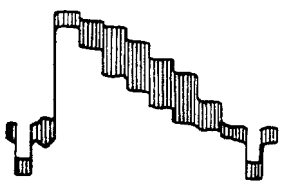
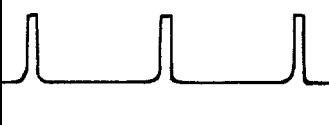
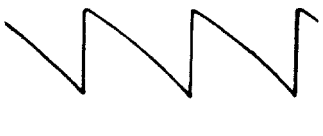
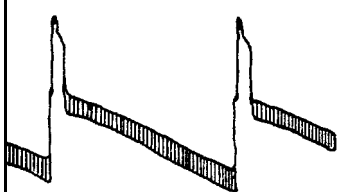
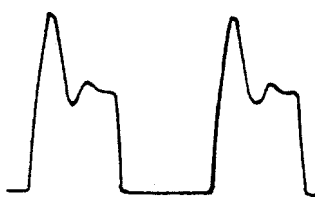
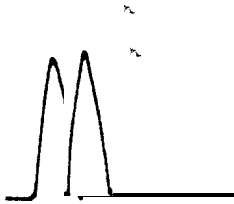
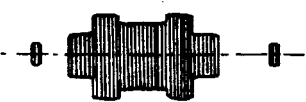
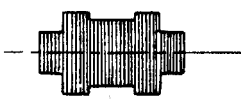
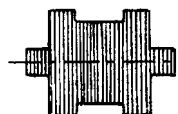
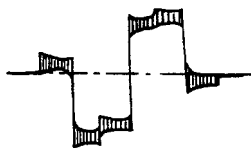
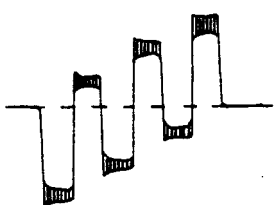
MAIN CIRCUIT	
 Playback Chrominance Signal	 Recording Chrominance Signal
 Playback Luminance Signal	 Recording Luminance Signal
 E-E Signal	 Audio Recording Signal
 Audio Playback Signal	
Y/C CIRCUIT	
 Playback Chrominance Signal	 Recording Chrominance Signal
 Playback Luminance Signal	 Recording Luminance Signal
 E-E Signal (Video)	
SYSTEM CONTROL, SERVO CIRCUIT	
 Drum Error Voltage	 Capstan Error Voltage
 Drum Frequency Comparison Signal	 Capstan Frequency Comparison Signal
 Drum Phase Comparison Signal	 Playback Control Comparison Signal
HEAD AMP CIRCUIT	
 Playback Chrominance Signal	 Recording Chrominance Signal
 Playback Luminance Signal	 Recording Luminance Signal
AUDIO CIRCUIT	
 Audio Playback Signal	 E-E Signal (Audio)
 Audio Recording Signal	

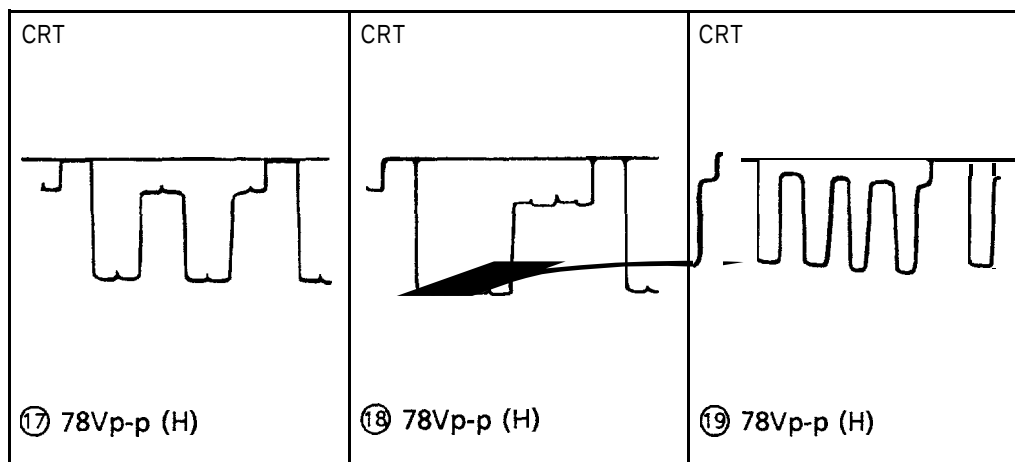
VCR WAVEFORMS

 J: 1.0Vp-p C201 PIN5 REC/EE	 V: 2.0Vp-p IC201 PIN9 REC/PB	 I: 0.5Vp-p C501 PIN17 REC/EE	 v: 1.0Vp-p IC201 PIN21 PB
 V: 700mVp-p TP201 REC/EE	 V: 240mVp-p Q504 EMITTER REC/EE PAL	 V: 220mVp-p Q504 EMITTER REC/EE NTSC	 V: 800mVp-p BURST 400mVp-p IC501 PIN12 PB
 V: 350mVp-p IC201 PIN28 PB	 H: 3.579545MHz (NTSC) H: 4.433619MHz (PAL) V: 1.2Vp-p TP504 fsc	 V: 4.8Vp-p IC201 PIN1 COMPOSITE SYNC.	 V: 200mVp-p TP501 PB CHROMA
 V: 440mVp-p CE CONNECTOR PIN1 REC REC SIGNAL	 V: 140mVp-p TP301 REC	 V: 4.8Vp-p HEAD SWITCHING PULSE XA CONNECTOR PIN3 REUPB	

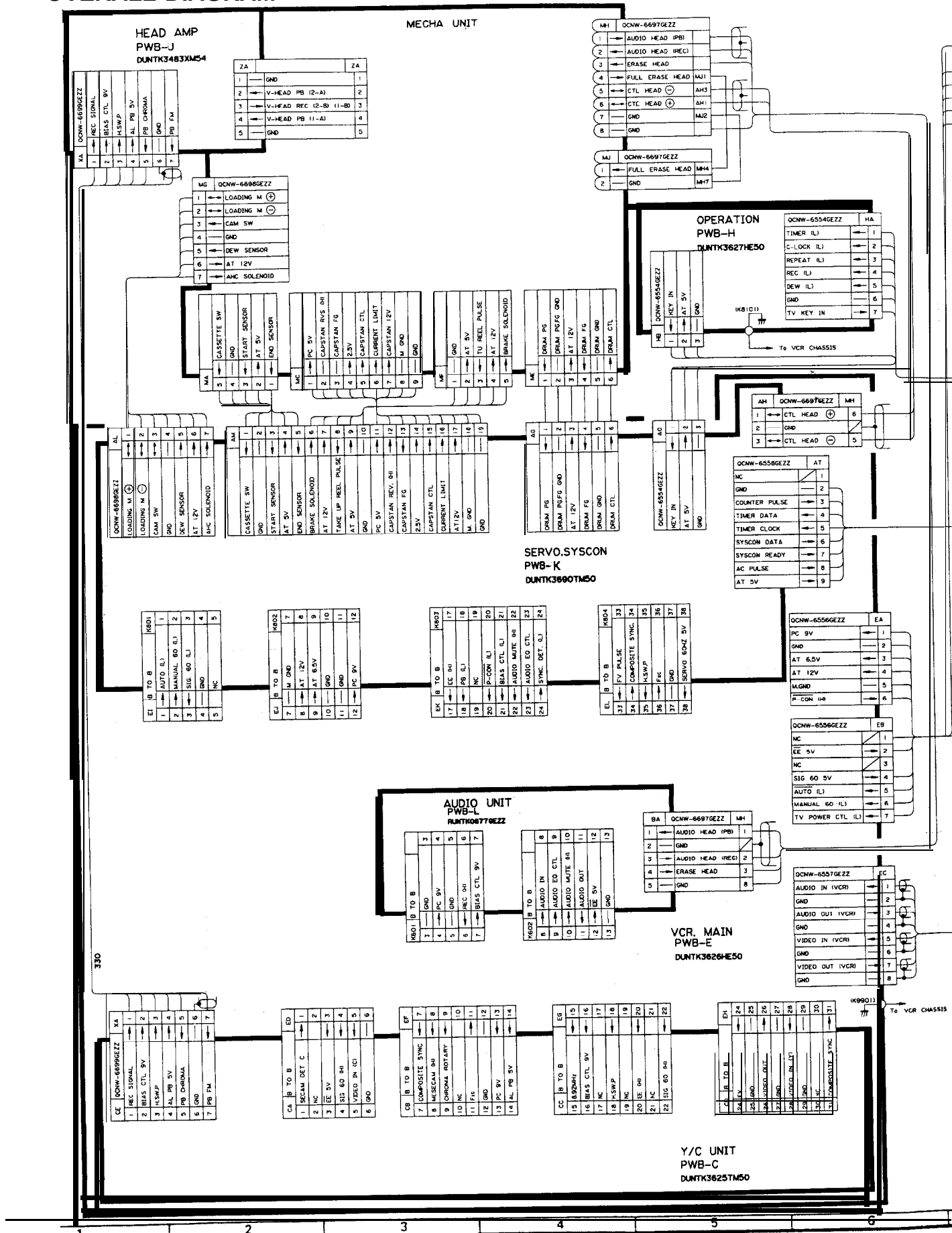
SERVO  f: 3.58MHz (NTSC) f: 4.43MHz (PAL) V: 0.3Vp-p C701 PIN42 REC/PB fsc	SERVO  V: 0.4Vp-p AG CONNECTOR PIN6 PB DRUM PG	SERVO  V: 2.0Vp-p IC701 PIN7 REC/PB DRUM PG	SERVO  H: 720Hz (NTSC) H: 600Hz (PAL) V: 1.9Vp-p IC701 PIN9 PB DRUM FG
SERVO  f: 1080Hz (NTSC SP) f: 757Hz (PAL SP) V: 1.7Vp-p AM CONNECTOR PIN13 CAPSTAN FG	SERVO  V: 3.2Vp-p IC701 PIN36 PB CTL	SERVO  V: 5.0Vp-p IC801 PIN4 EE (REC) V-SYNC.	AUDIO  H: 70 ± 5kHz V: 7.35mVp-p TP601(+), TP602(-) REC
AUDIO  H: 1kHz V: 160mV K602 PIN8 REC/EE	AUDIO  H: 1kHz V: 160mV K602 PIN11 REC/EE/PB	AUDIO  H: 70 ± 5kHz V: 70Vp-p BA CONNECTOR PIN4-5 REC	

TV WAVEFORMS

MOTHER  ① 2.0Vp-p (H)	MOTHER  ② 8.8Vp-p (H)	MOTHER  ③ 2.0Vp-p (V)	MOTHER  ④ 2.2Vp-p (V)
MOTHER  ⑤ 55Vp-p (V)	MOTHER  ⑥ 1.2Vp-p (H)	MOTHER  ⑦ 165Vp-p (H)	MOTHER  ⑧ 950Vp-p (H)
MOTHER  ⑨ 13Vp-p (H)	MOTHER  ⑩ 10Vp-p (H)	MOTHER  ⑪ 0.47Vp-p (H)	MOTHER  ⑫ 0.56Vp-p (H)
MOTHER  ⑬ 2.6Vp-p (H)	MOTHER  ⑭ 0.42Vp-p (H)	MOTHER  ⑮ 0.92Vp-p (H)	MOTHER  ⑯ 0.67Vp-p (H)

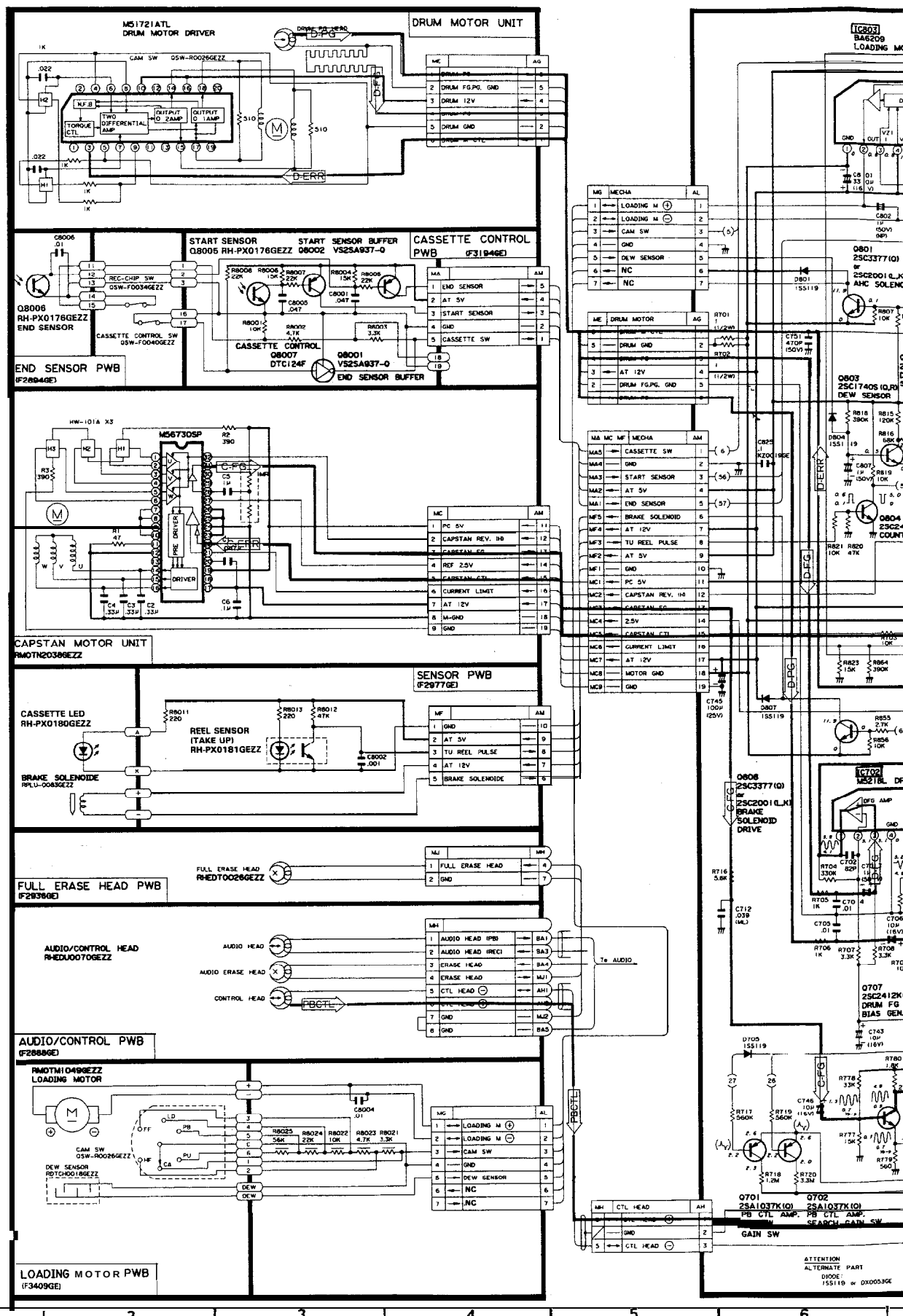


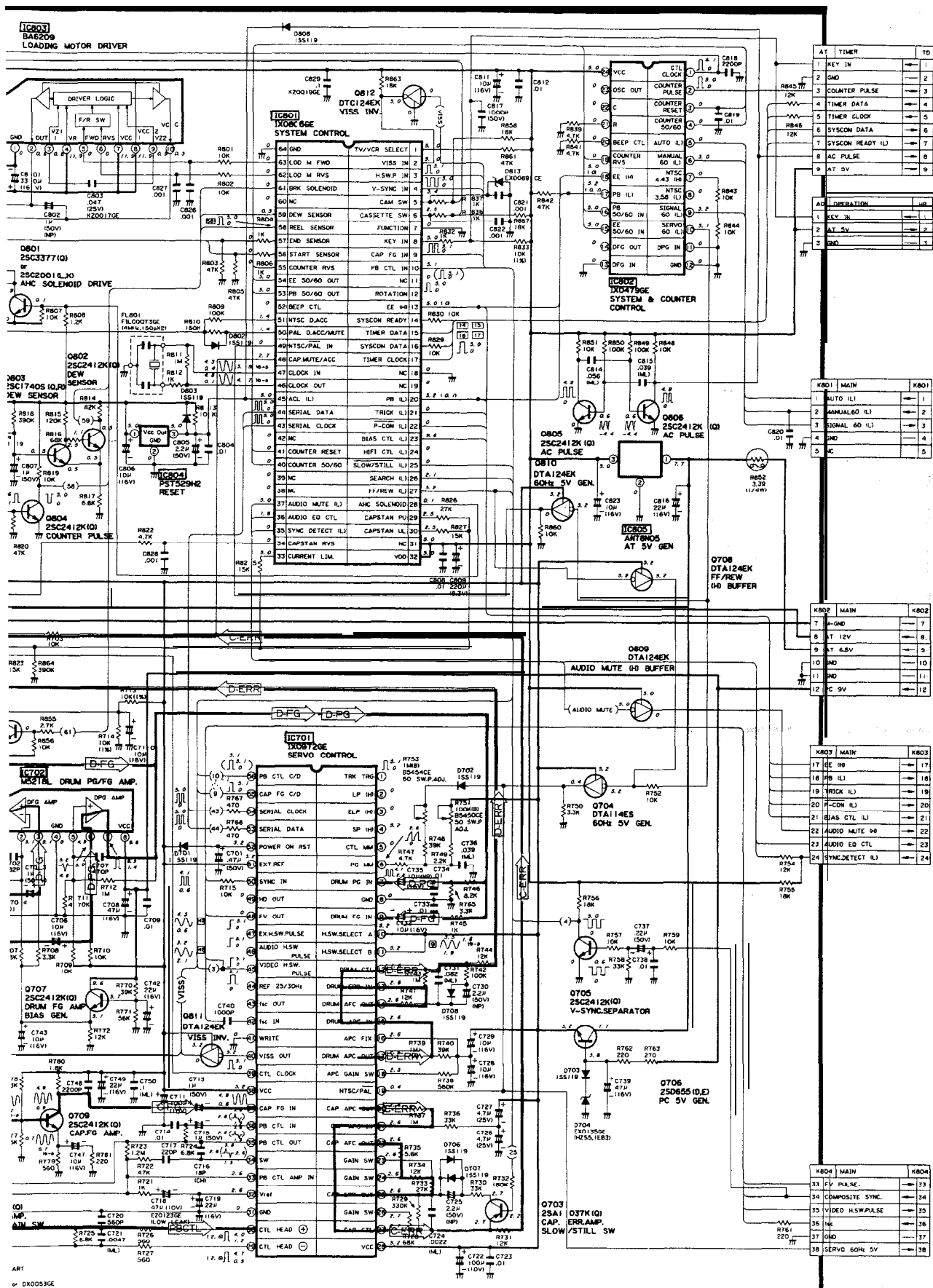
OVERALL DIAGRAM



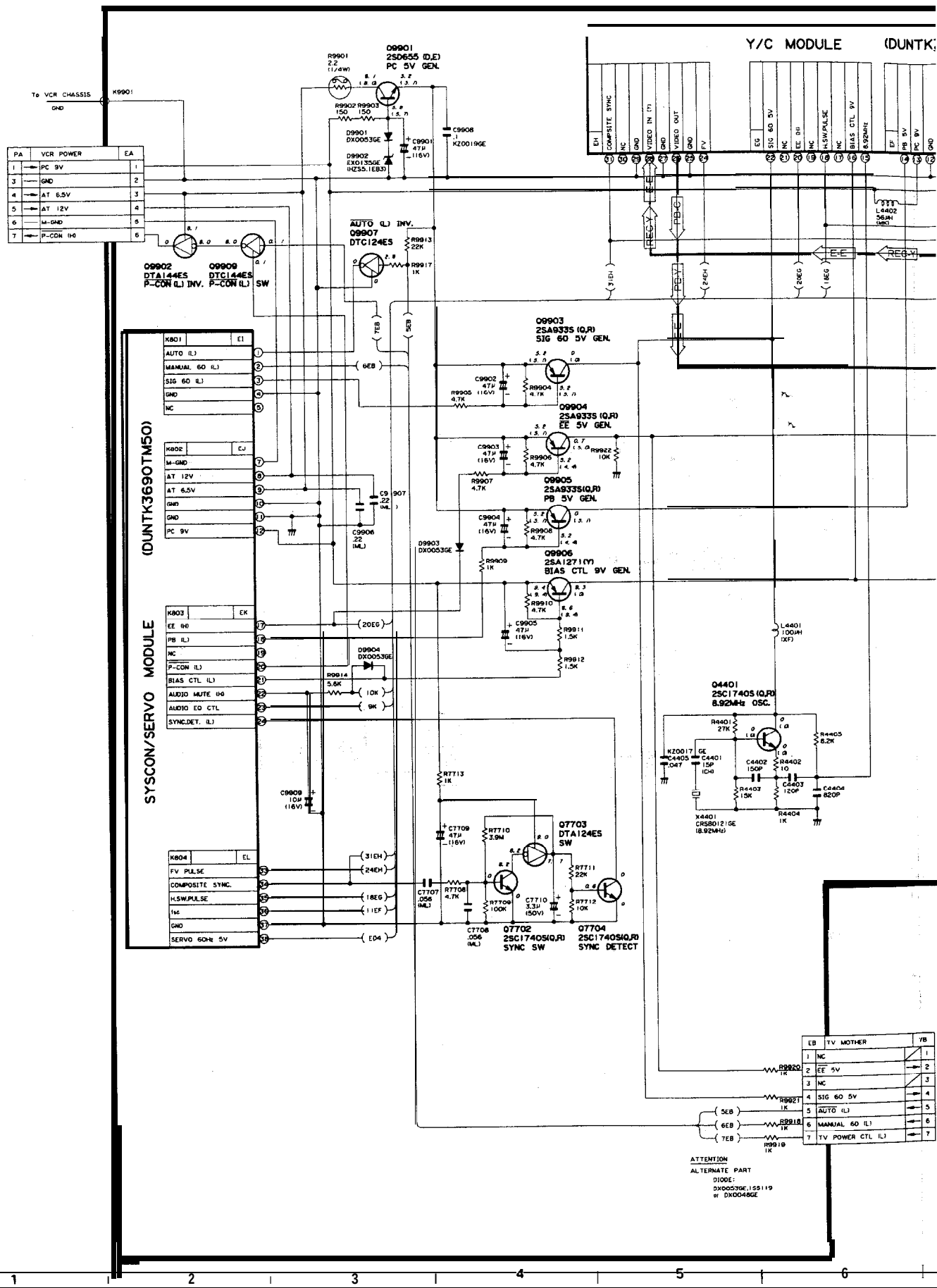


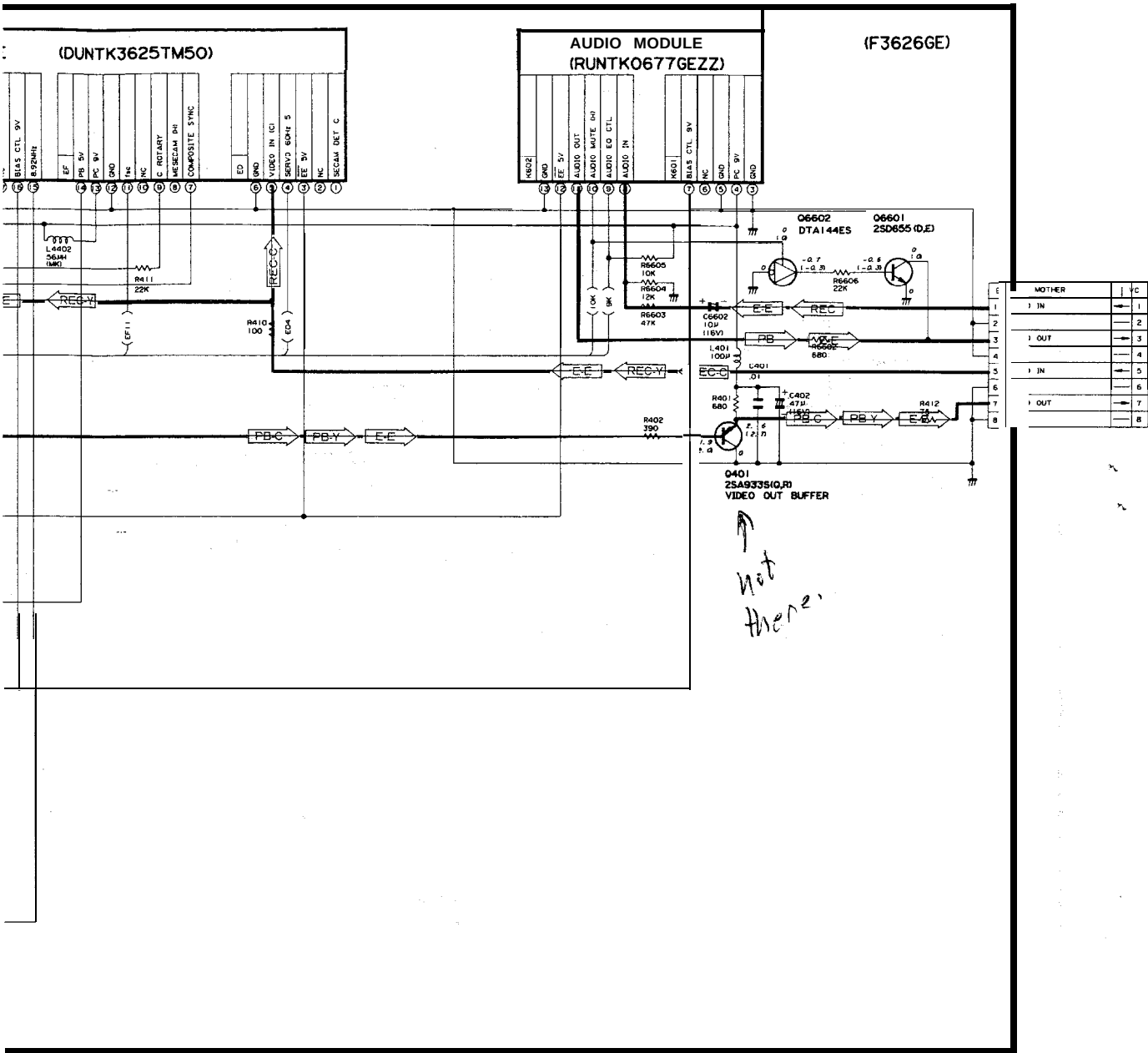
SYSTEM CONTROL, SERVO CIRCUIT





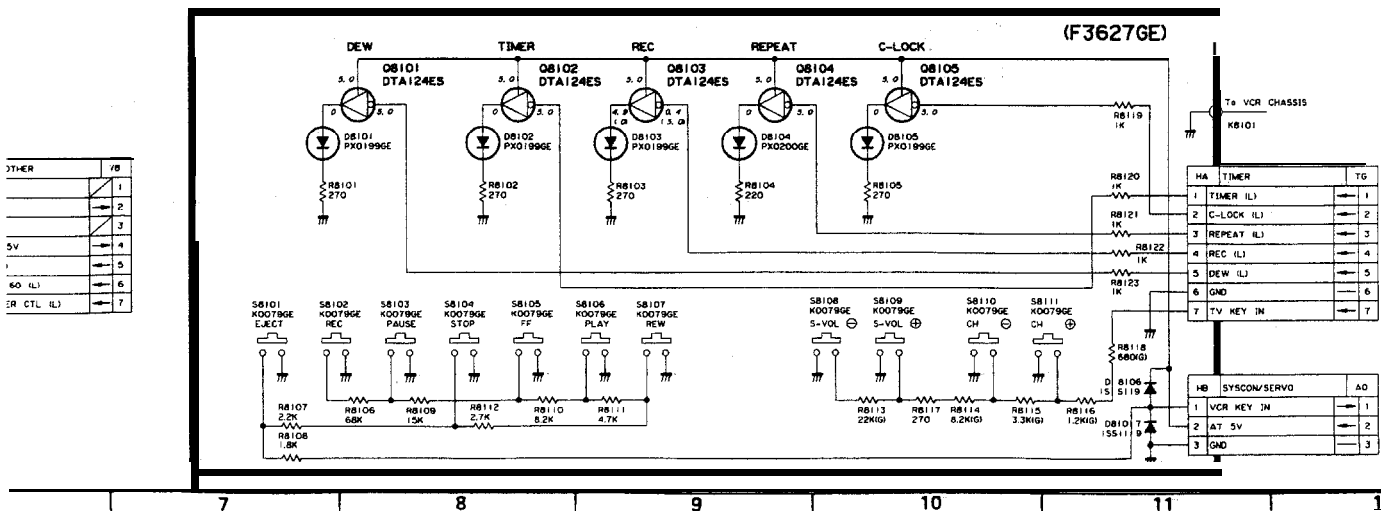
MAIN CIRCUIT

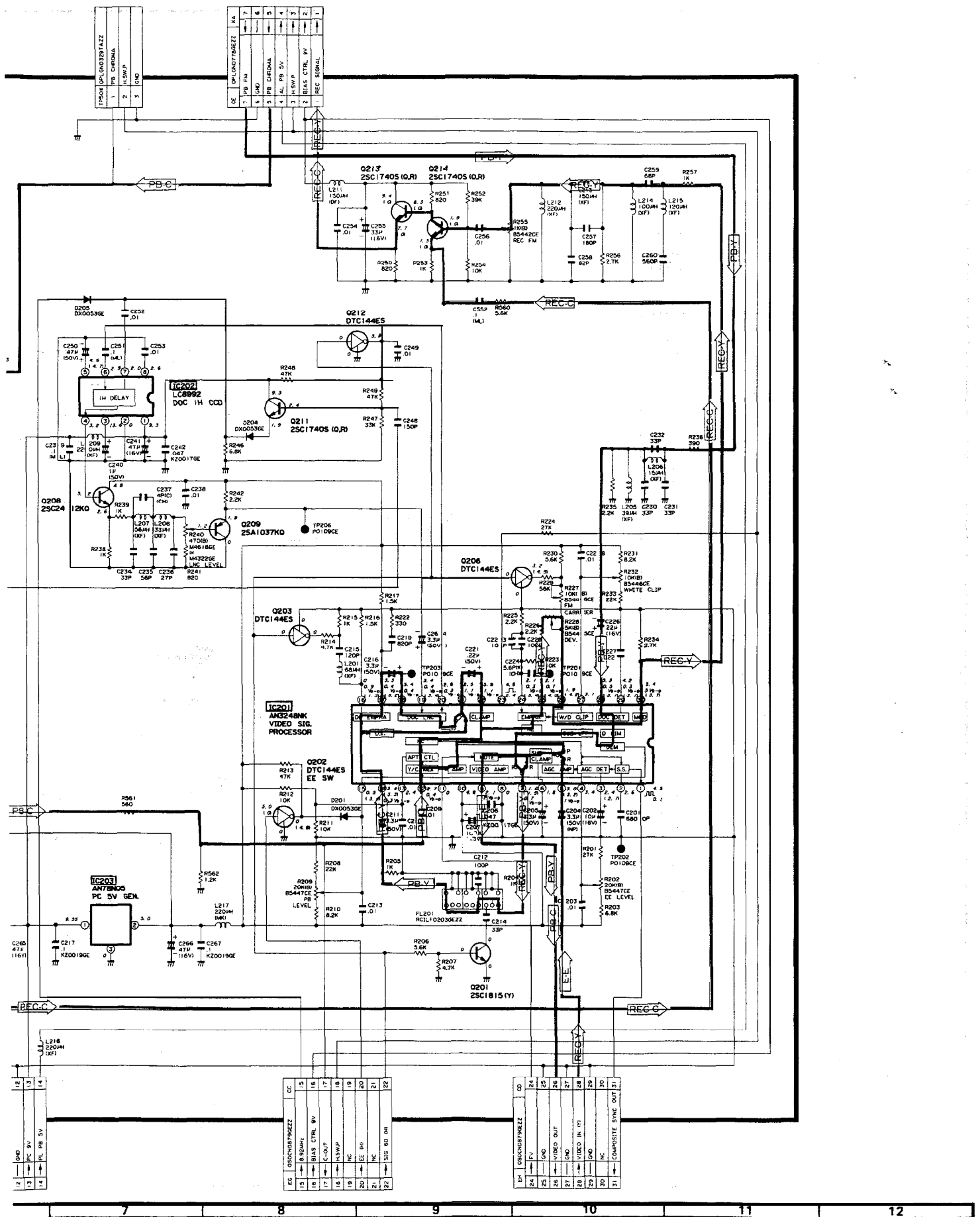




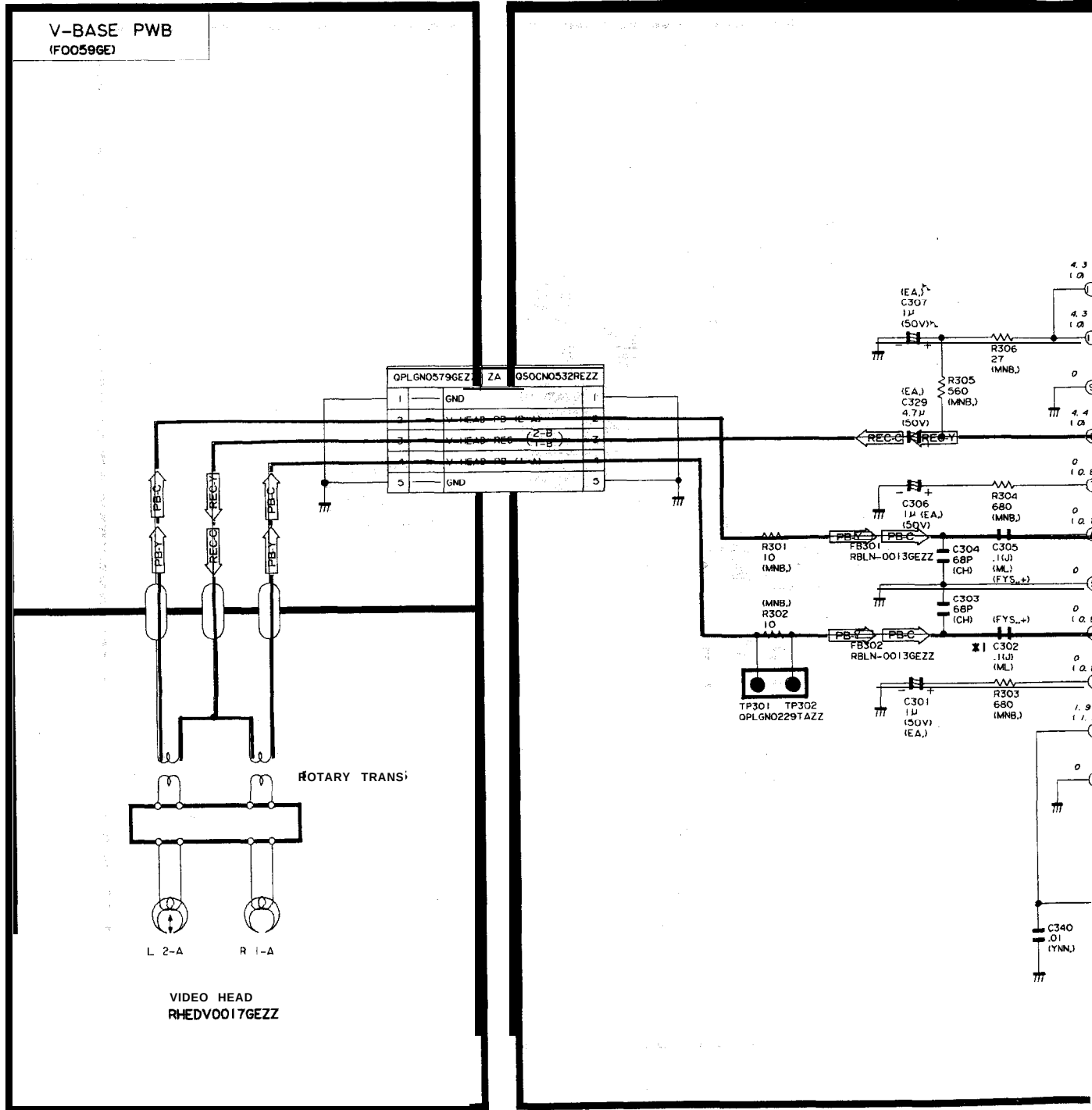
OPERATION

DUNT3627HE50





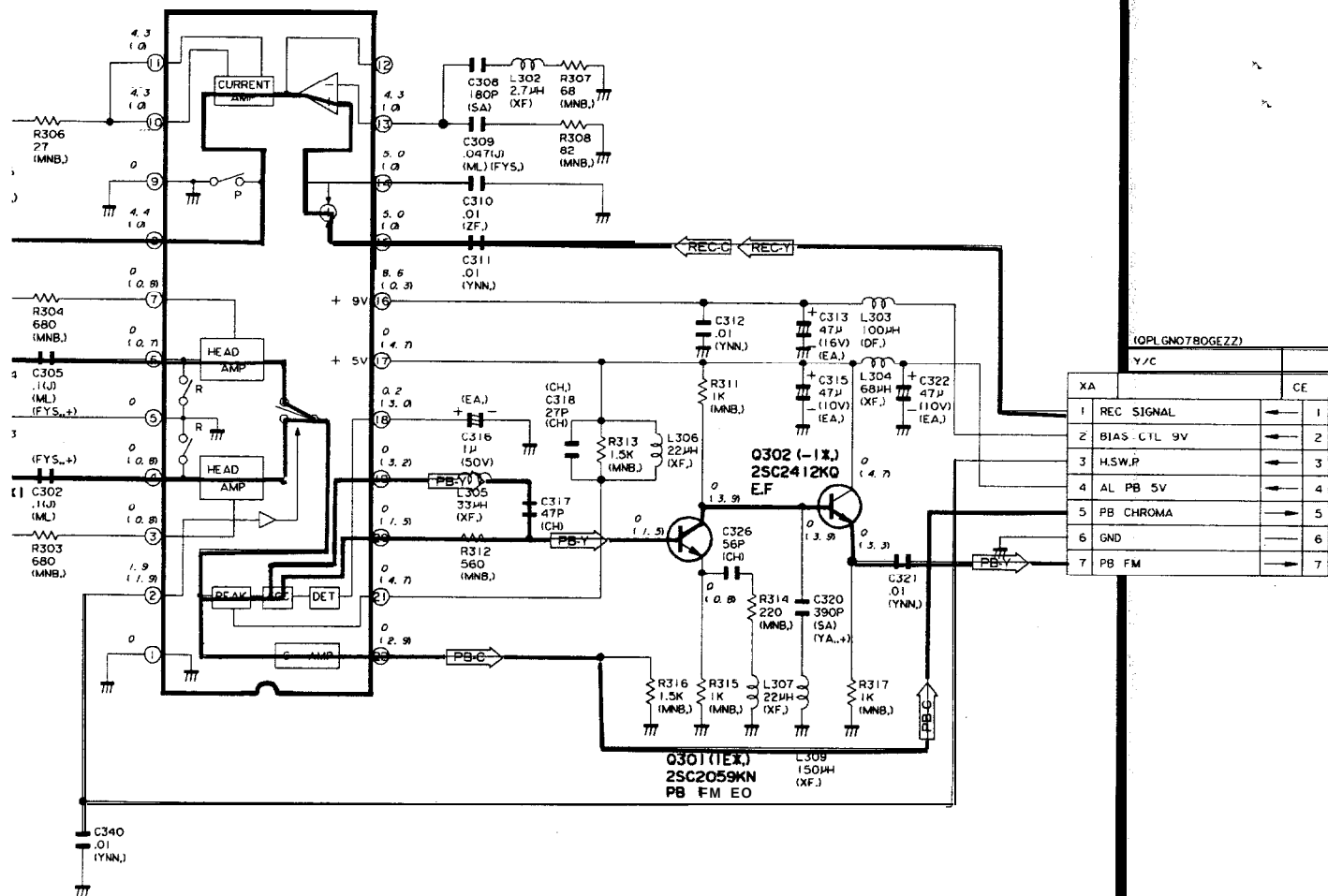
HEAD AMPLIFIER CIRCUIT



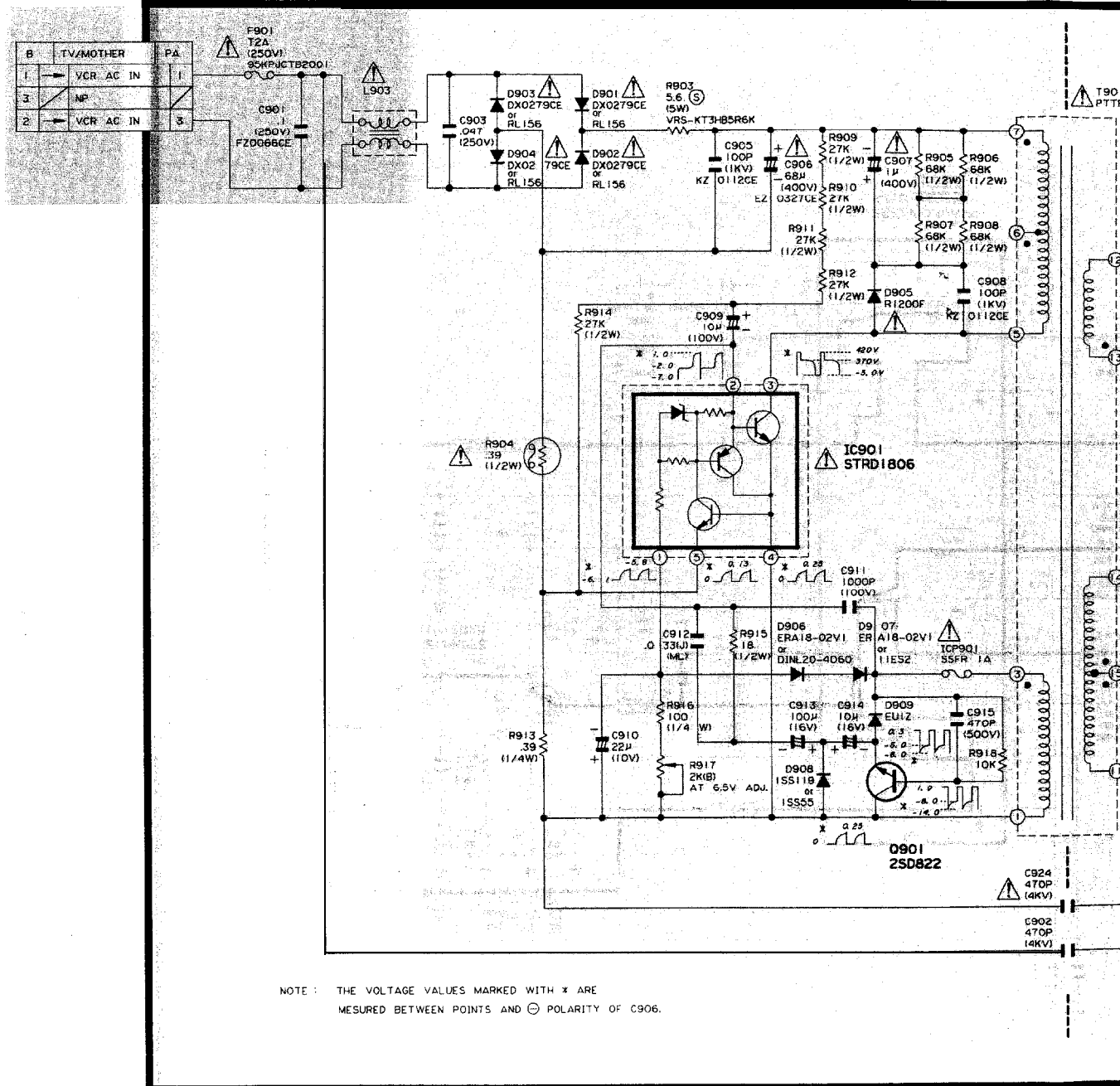
* VOLTAGE MEASUREMENT MODE

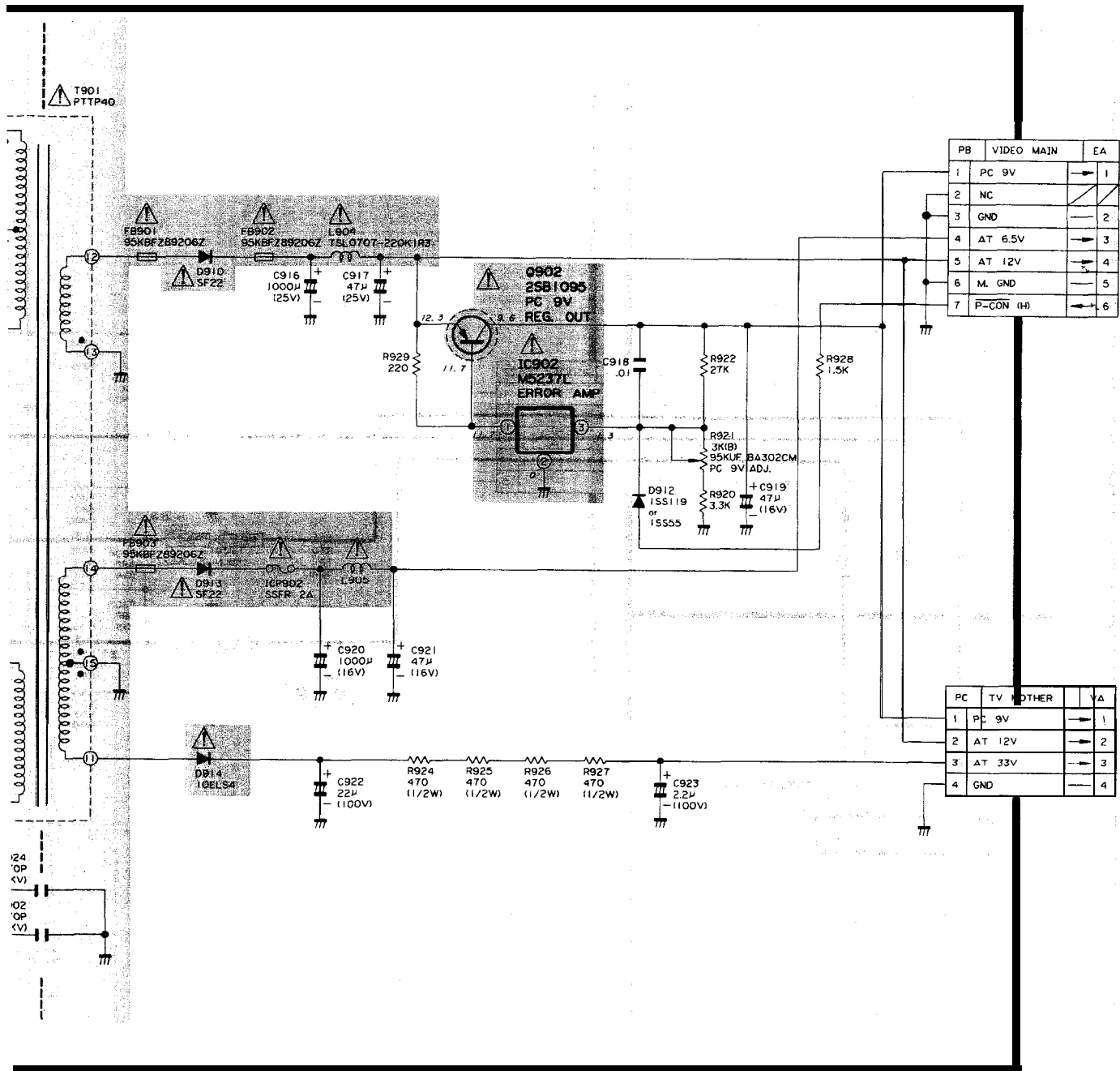
PB Parentheses ()
REC **Without** Parentheses

IC301
VH1BA7252S/-1
or VH1XRA7252/-1

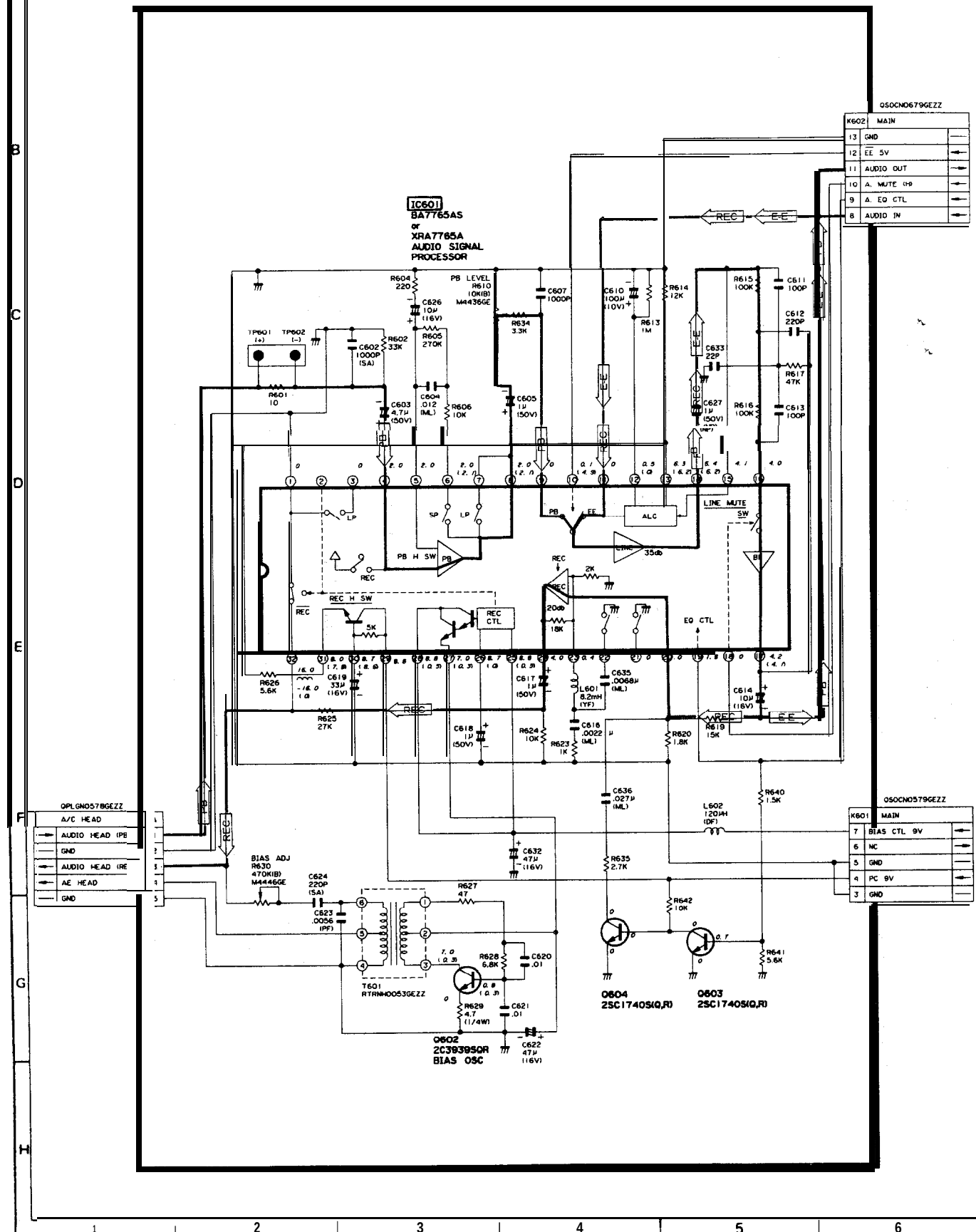


VCR-POWER CIRCUIT





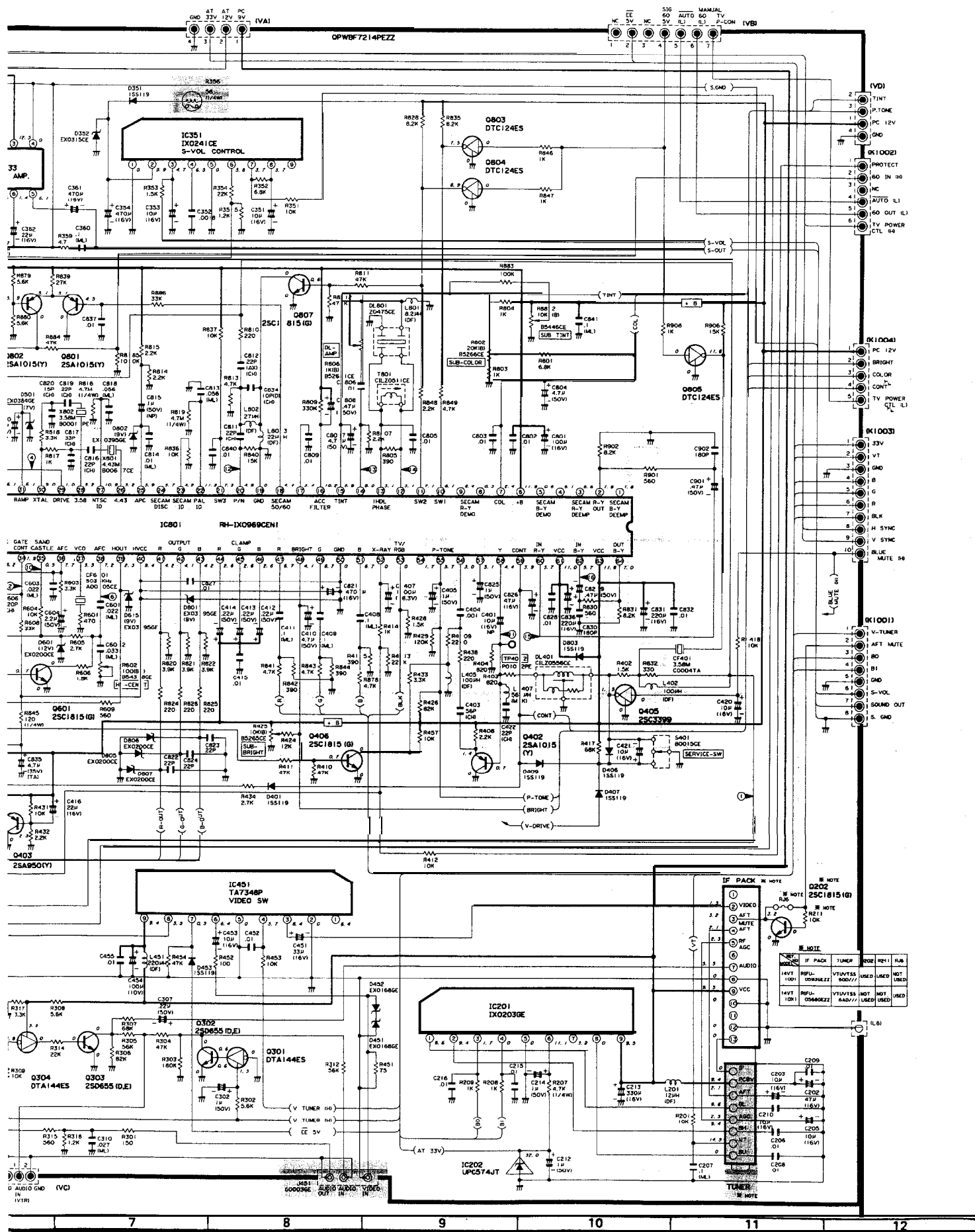
AUDIO CIRCUIT



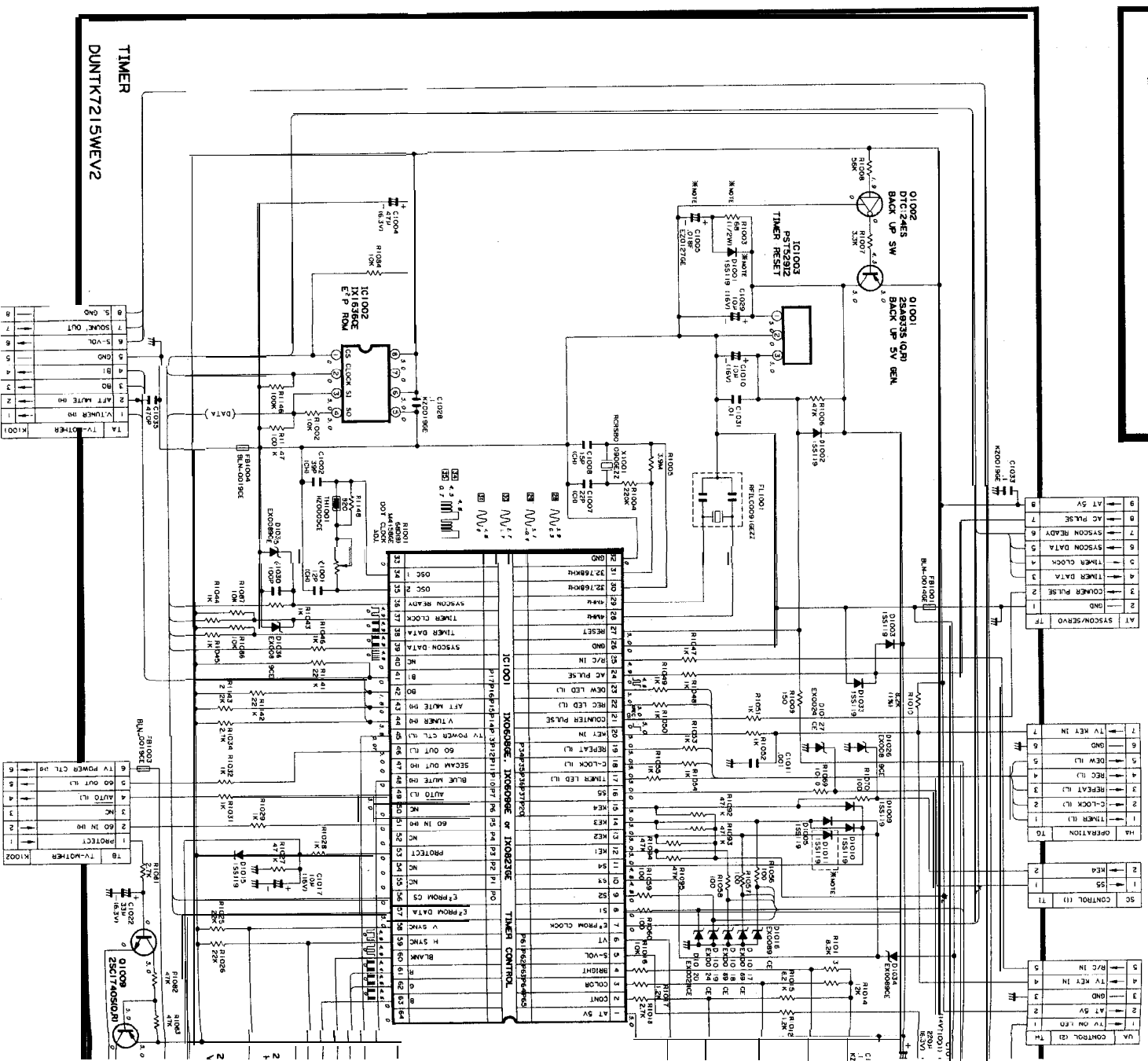
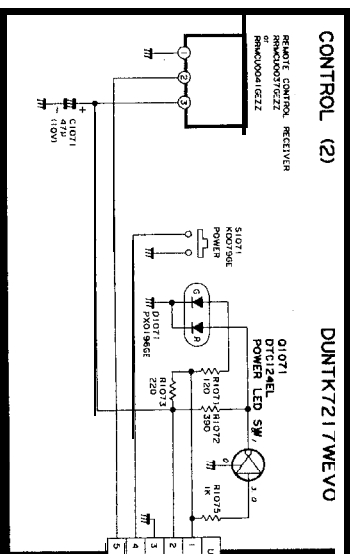
* VOLTAGE MEASUREMENT MODE

PB Parentheses ()

REC Without Parentheses

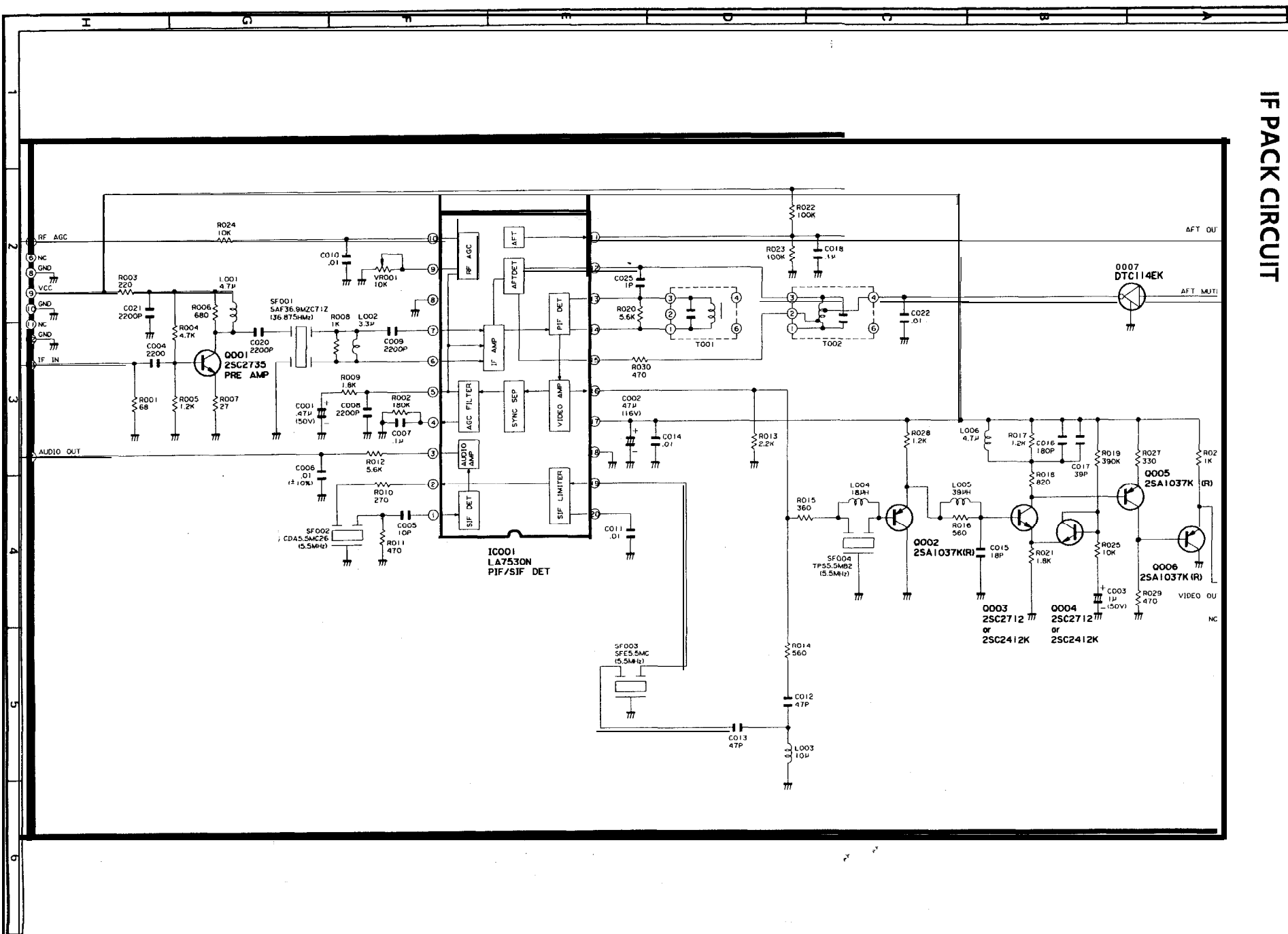


TIMER / TIMER CONTROL (1), (2) CIRCUIT

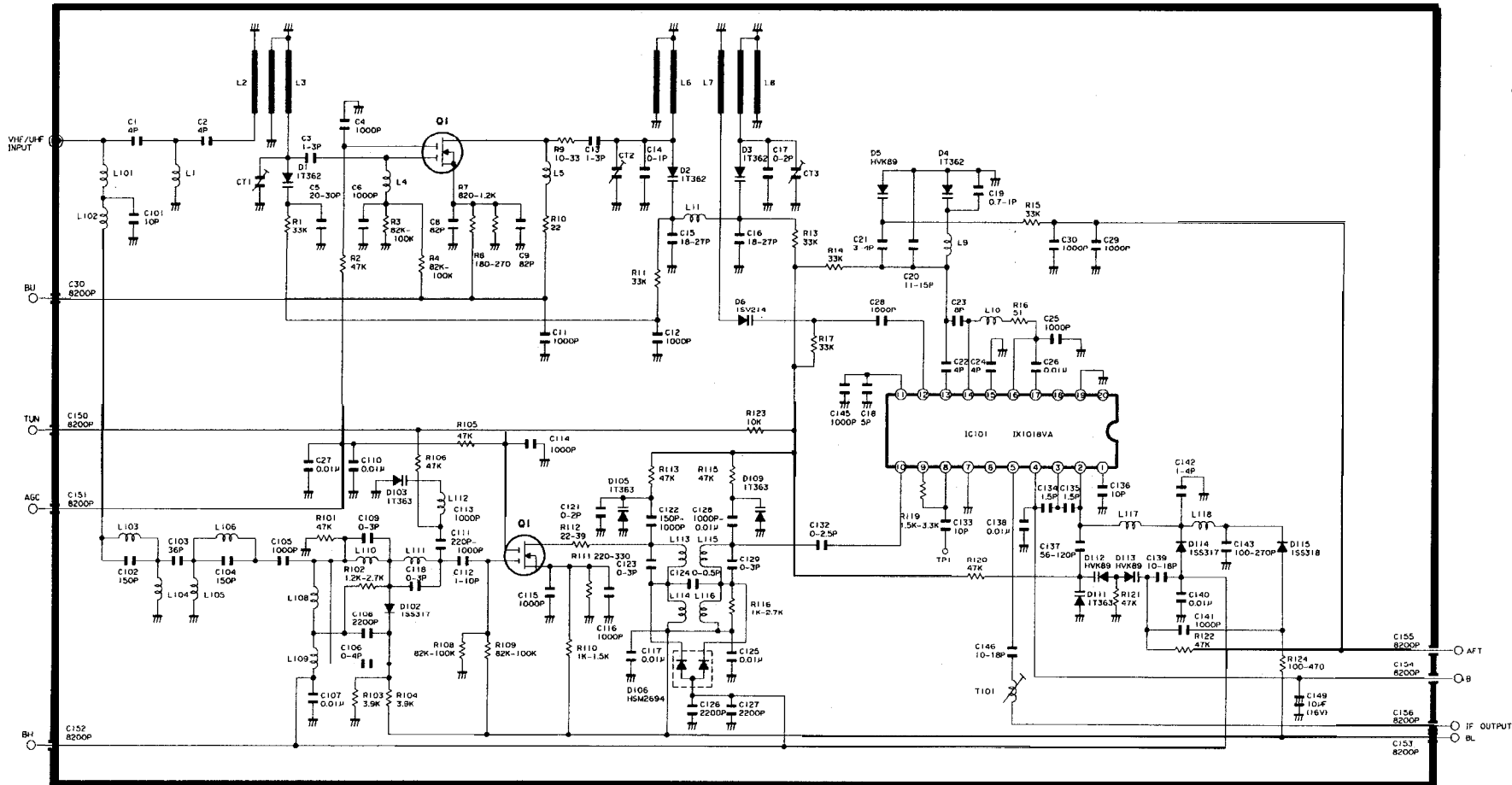




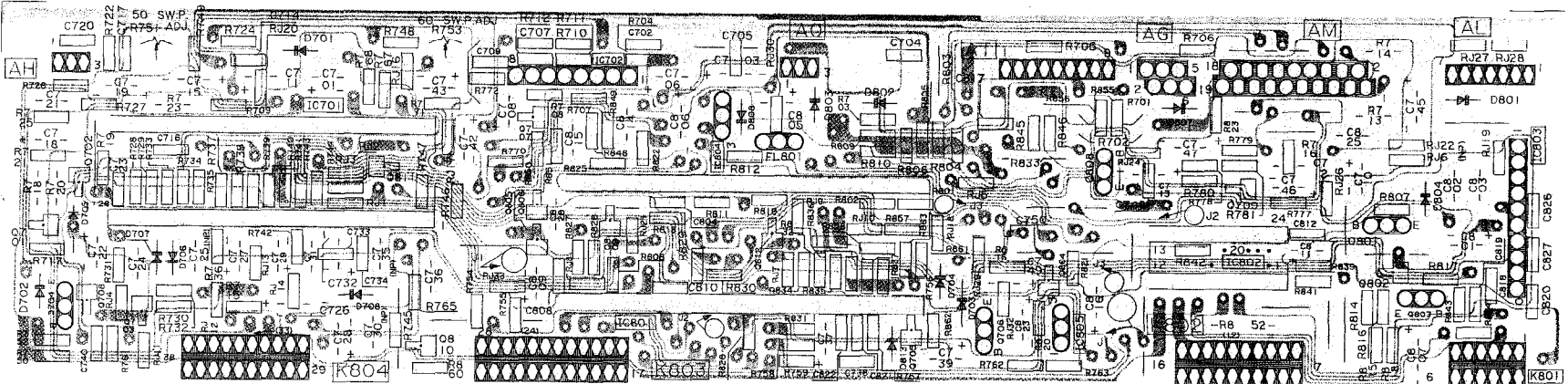
IF PACK CIRCUIT



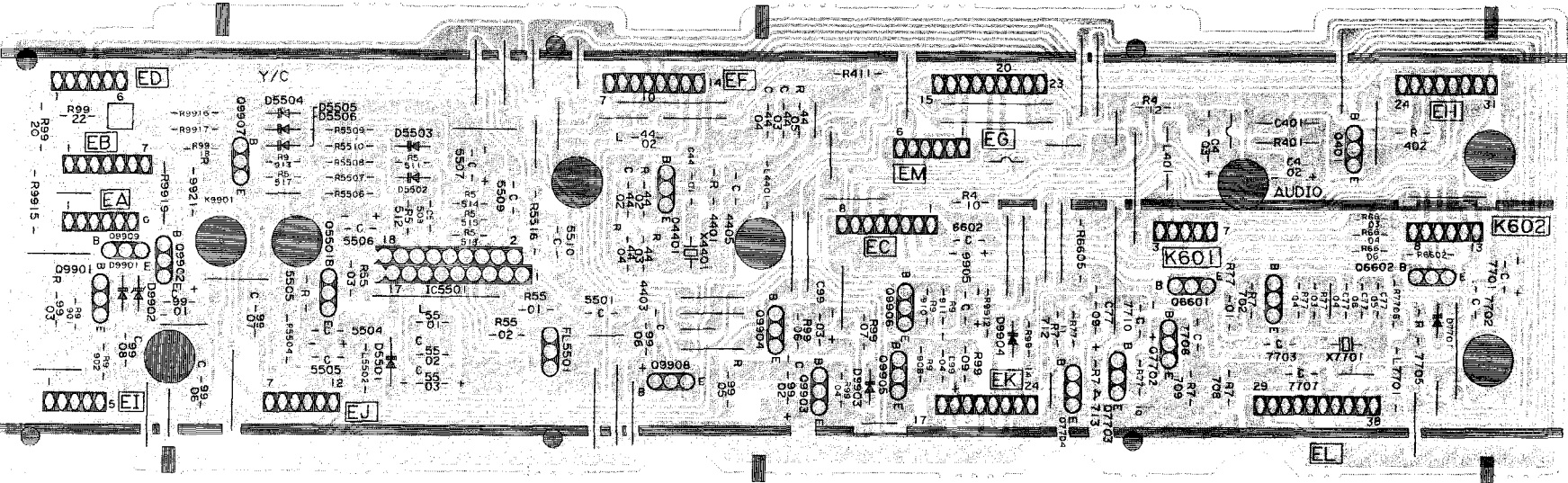
TUNER CIRCUIT



WIRING SIDE PWBS

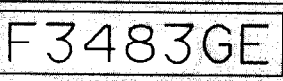


SYSTEM CONTROL / SERVO PWB

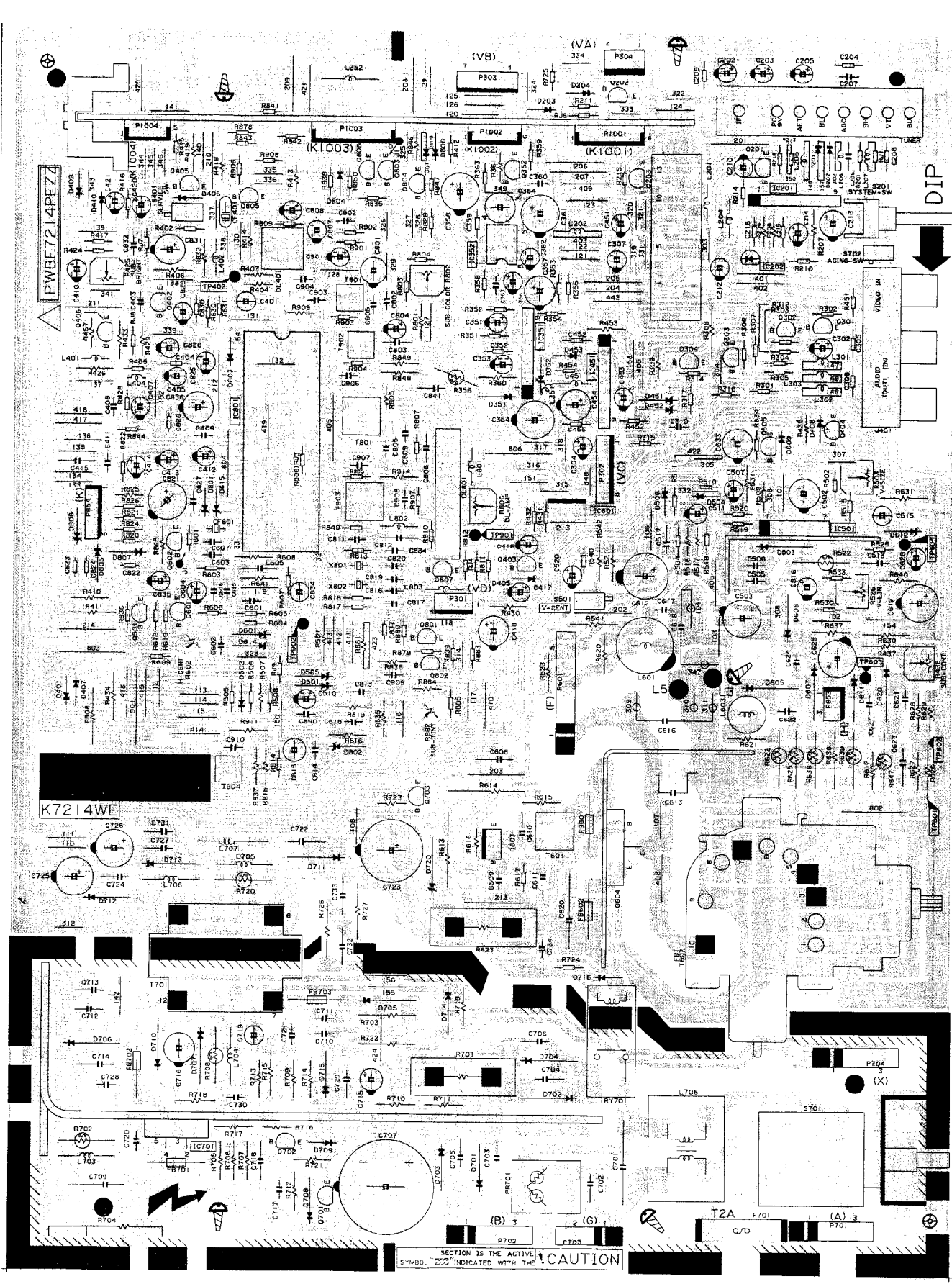


MAIN POWER

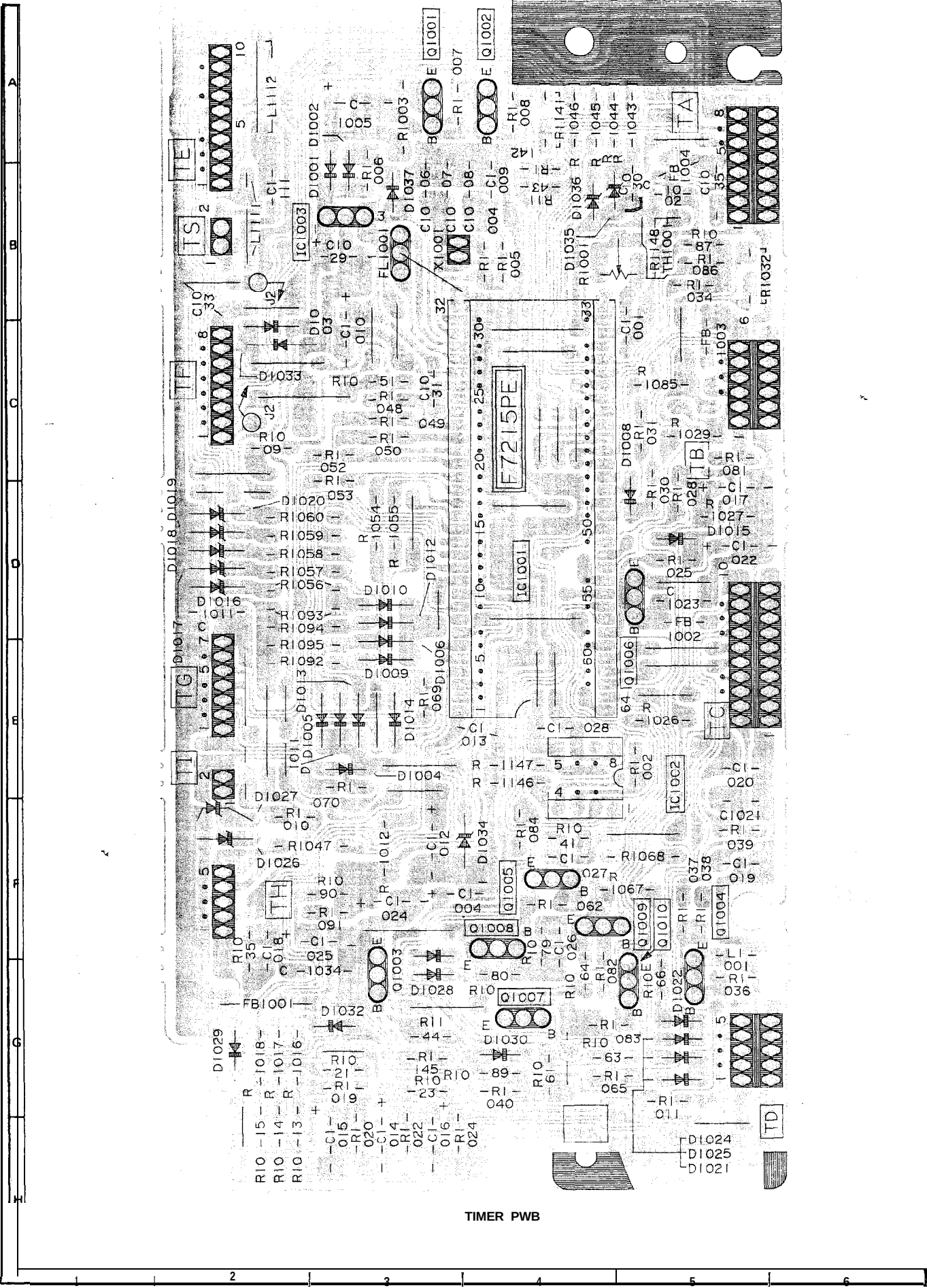








TV-MOTHER PWB



TIMER PWB

REPLACEMENT PARTS LIST

PARTS REPLACEMENT

Many electrical and mechanical parts in video cassette recorder have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by  and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

- | | |
|-----------------|----------------|
| 1. MODEL NUMBER | 2. REF. NO. |
| 3. PART NO. | 4. DESCRIPTION |
| 5. PRICE CODE | |

 **MARK: SAFETY RELATED PARTS**

★MARK: SPARE PARTS-DELIVERY SECTION

PWB ASSEMBLY IS NOT REPLACEMENT ITEM

Ref. No.	Part No.	★	Description	Code
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VCR MAIN CIRCUIT

PWB-E DUNTK3626HE50 - VCR Main Board Assembly

TRANSISTORS

Q401,	VS2SA933SQR1 E J 2SA933S(Q.R)	AB
9903,		
9904,		
9905		
44401,	VS2C1740SQR1 E J 2SC1740S(Q.R)	AC
7702,		
7704		
Q6601,	VS2SD655-DE1 E J 2SD655(D.E)	AC
9901		
Q6602,	VSDTA144ES/-1 J DTA144ES	AB
9902		
47703	VSDTA124ES/-1 J DTA124ES	AB
Q9906	VS2SA1271-Y-I J 2SA1271(Y)	AB
Q9907	VSDTC124ES/-1 J DTC124ES	AB
Q9909	VSDTC144ES/-1 J DTC144ES	AB

Ref. No.	Part No.	★	Description	Code
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DIODES AND CRYSTAL

D9901,	RH-DX0053GEZZ J	AA
9903,	or	
9904	VHD1SS1 19// -1 J 1SS119	AA
D9902	RH-EX0135GEZZ J HZS5.1EB3	AA
X4401	RCRSB0121GEZZ J 8.92MHz	AH

COILS AND FILTER

L401	VP-DF101K0000 J 100μH	AB
L4401	VP-XF101K0000 J 100μH	AB
L4402	VP-MK560K0000 J 56μH	AB

CAPACITORS

c4405	RC-KZ0017GEZZ J 0.047μF, Ceramic	AA
C7707	VCFYSA1HB563J J 0.056μF, 50V, 5%, Mylar	AA
C9906	VCFYSA1HB224JJ 0.22μF, 50V, 5%, Mylar	AB
C9908	RC-KZ0019GEZZ J 0.1μF, Ceramic	AA

RESISTOR

R9901	VRG-RC2EB2R2J J 2.2 ohm, 1/4W, Fuse Resistor	AB
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MISCELLANEOUS

P9901	QPLGN0678GEZZ J Plug, 6 pin (EA)	AB
P9902	QPLGN0778GEZZ J Plug, 7 pin (EB) .. A	C
P9903	QPLGN0878GEZZ J Plug, 8 pin (EC)	AC
P9905,	QPLGN0679GEZZ J Plug, 6 pin (ED)	AB
9910,	(EJ)	
9912,	(EL)	
9915	(K602)	
P9906,	QPLGN0879GEZZ J Plug, 8 pin (EF)	AB
9907,	(EG)	
9908,	(EH)	
9911	(EK)	
P9909,	QPLGN0579GEZZ J Plug, 5 pin (Ei)	AB
9914	(K601)	

SYSTEM-CONTROL AND SERVO CIRCUIT

PWB-K DUNTK3690TM50 - System-Control/Servo Board Assembly

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	•	Description	Code
TRANSISTORS					CONTROLS				
Q701, 702, 703	VS2SA1037KQ-1 J		2SA1037K(Q)	AA	R751	RVR-B5450CEZZ J	100k(B)	50Hz Switching Point Adj.	AB
Q704	VSDTA114ES/-1 J		DTA114ES	AB	R753	RVR-B5454CEZZ J	1M(B)	60Hz Switching Point Adj.	AB
Q705, 707, 709, 802, 804, 805, 806	VS2SC2412KQ-1 J		2SC2412K(Q)	AA	CAPACITORS				
Q706	VS2SD655-DE1 E J		2SD655(D.E)	AC	C711, 722	VCEAGA1AW107M J	100μF, 10V, 20%, Electrolytic		AB
Q708, 809, 810, -811	VSDTA124EK/-1 J		DTA124EK	AB	C712, 736, 815	VC FYSAI HB393J J	0.039μF, 50V, 5%, Mylar		AA
Q801, 808	VS2SC3377-Q-1 J		2SC3377(Q)	AC	C718	RC-EZ0123GEZZ J	47μF, 10V, Electrolytic		AB
	or				C721	RC-QZA472TAYJ J	0.0047μF, Mylar		AB
	VS2SC2001 L K - 1 J		2SC2001(L.K)	AA	C724	RC-QZA222TAYJ J	0.0022μF, Mylar		AB
Q803	VS2C17405QR1 E J		2SC17405(Q.R)	AC	C725, 730	VCE9EA1 HW225M J	2.2μF, 50V, 20%, Electrolytic (N.P)		AB
Q812	VSDTC124EK/-1 J		DTC124EK	AB	c731	VC FYSA1 HB823J J	0.082μF, 50V, 5%, Mylar		AB
INTEGRATED CIRCUITS					c735	VCE9EA1CW106M J	10μF, 16V, 20%, Electrolytic (N.P)		AC
IC701	RH-iX0972GEZZ J			AS	c745	VCEAGA1EW107M J	100μF, 25V, 20%, Electrolytic		AD
IC702	VHiM5218L/-1 J			AF	C750	VC FYSA1HB104J J	0.1μF, 50V, 5%, Mylar		AB
IC801	RH-iX0806GEZZ J			AV	C801	VCEAGA1CW337M J	330μF, 16V, 20%, Electrolytic		AC
IC802	RH-iX0479GEZZ J			AL	C802	VCE9EA1HW105M J	1μF, 50V, 20%, Electrolytic (N.P)		AC
IC803	VHiBA6209//1 E J			AG	C803	RC-KZ0017GEZZ J	0.047μF, 25V, Ceramic		AA
IC804	VHiPST529H2-1 J			AD	C809	VCEA2A0JW227M J	220μF, 6.3V, 20%, Electrolytic		AB
IC805	VHiAN78N05/-1 J			AF	C814	VC FYSA1 HB563J J	0.056μF, 50V, 5%, Mylar		AA
DIODES AND FILTER					C825, 829	RC-KZ0019GEZZ J	0.1μF, 25V, Ceramic		AA
D701, 702, 703, 705, 706, 707, 708, 801	RH-DX0053GEZZ J			AA	RESISTORS				
	or				R713, 714, 833	VRN-RA2BK103F J	10k ohm, 1/8W, Metal Film		AA
	VHD1SS1 19//1 J		1SS119	AA	R852	VRG-RC2EB3R3J J	3.3 ohm, 1/4W, Fuse Resistor		AB
804, 807, 808					MISCELLANEOUS				
D704	RH-EX0135GEZZ J		HZS5.1EB3	AA	PZETV0331GEZZ J		Insulator		AB
D813	RH-EX0089CEZZ J		Zener Diode	AB	P808, 811	QPLGN0380GEZZ J	Plug, 3 pin (AH) (AO)		AB
FL801	RFiLC0073GEZZ J		Filter, 4MHz	AD					

Ref. No.	Part No.	*	Description	Code
P809	QPLGN0778GEZZ J		Plug, 7 pin (AL)	AC
P812	QPLGN0980GEZZ J		Plug, 9 pin (AT)	AC
SC801	QSOCN0579GEZZ J		Socket, 5 pin (K801)	AC
SC802,	QSOCN0679GEZZ J		Socket, 6 pin (K802)	AC
804			(K 8 0 4)	
SC803	QSOCN0879GEZZ J		Socket, 8 pin (K803)	AC
SC807	QSOCN0695GEZZ J		Socket, 6 pin (AG)	AB
SC810	QSOCN1994GEZZ J		Socket, 19 pin (AM)	AC
Y/C CIRCUIT				
PWB-C	DUNTK3625TM50-		Y/C Board Assembly	—
TRANSISTORS				
Q201,	VS2SC1815YW-1 J		2SC1815(Y)	AC
506				
Q202,	VSDTC144ES/-1 J		DTC144ES	AB
203,				
206,				
212				
Q208,	VS2SC241 2KQ-1 J		2SC2412KQ	AA
503,				
507,				
508,				
512,				
513,				
514				
Q209	VS2SA1037KQ-1 J		2SA1037KQ	AA
Q211,	VS2C1740SQR1 E J		2SC1740S(Q.R)	AC
213,				
214,				
504,				
509,				
510,				
511				
Q501,	VSDTC144EK/-1 J		DTC144EK	AB
502,				
515				
Q505	VSDTA144ES/-1		DTA144ES	AB
INTEGRATED CIRCUITS				
IC201	VHiAN3248NK-1 J			AP
IC202	VHiLC8992//-1 J			AK
IC203	VHiAN78N05/-1 J			AF
IC501	VHiTA8757AN-1 J			AP

Ref. No.	Part No.	*	Description	Code
DIODES AND CRYSTALS				
D201,	RH-DX0053GEZZ J			AA
204,	or			
205,	VHD1SS1 19// -1 J		ISS119	AA
502,				
503,				
505,				
506,				
507				
X501	RCRSB0002CEZZ J		4.43MHz	AM
X502	RCRSB0009GEZZ J		3.58MHz	AL
COILS AND FILTERS				
L201	VP-XF680K0000 J		68μH	AB
L205	VP-XF390K0000 J		39μH	AB
L206	VP-XF150K0000 J		15μH	AB
L207	VP-XF560K0000 J		56μH	AB
L208	VP-XF330K0000 J		33μH	AB
L209,	VP-XF221 KOOOO J		220μH	AB
212,				
218				
L211	VP-DF151 KOOOO J		150μH	AB
L213	VP-XF151 KOOOO J		150μH	AB
L214	VP-XF101 KOOOO J		100μH	AB
L215	VP-XF121 KOOOO J		120μH	AB
L217	VP-MK221 KOOOO J		220μH	AB
L501,	VP-MK471 KOOOO J		470μH	AB
502,				
503				
L504,	VP-DF221KOOOO J		220μH	AB
507,				
509				
L505	VP-XF270K0000 J		27μH	AB
L506	VP-XF5R6K0000 J		5.6μH	AB
L508	VP-DF561 KOOOO J		560μH	AB
DL501	RCiLZ0208GEZZJ		Delay Line	AN
DL502	RCiLZ0292GEZZ J		Delay Line	AP
FL201	RCiLF0203GEZZ J		Filter	AK
FL501	RCiLF0204GEZZ J		Filter	AC
CONTROLS				
R202,	RVR-B5447CEZZ J		20k(B) EE Level Adj.	AB
209			Playback Level Adj.	
R227,	RVR-B5446CEZZ J		10k(B) FM Carrier Adj.	AB
232			White Clip Adj.	
R228	RVR-B5445CEZZ J		5k(B) Deviation Adj.	AB
R240	RVR-M4618GEZZ J		470(B) LNC Level Adj.	AB
	or			
	RVR-M4322GEZZ J			AB

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
R255	RVR-B5442CEZZ	J	1k(B) Rec.FM L e v e l A B Adj	AB	TRANSISTORS				
R518	RVR-B5443CEZZ	J	2k(B) Rec Chroma Level Adj.	AB	Q301	VS2SC2059KN1	E	J 2SC2059KN	AC
					Q302	VS2SC2412KQ-1	J	2SC2412KQ	AA
TRIMMERS					INTEGRATED CIRCUIT				
C514, 518	RTO-H1039GEZZ	J		AC	IC301	VHiXRA7252/-1	J		AF
						or			
						VHiBA7252S/-1	J		AH
CAPACITORS					COILS				
C204	VCE9AA1 HW335M	J	3.3μF, 50V, 20%, Electrolytic (N.P)	AE	L302	VP-XF2R7J0000	J	2.7μH	AC
C206, 242, 506, 520, 521	RC-KZ001 7GEZZ	J	0.047μF, Ceramic	AA	L303	VP-DF1 01 K0000	J	100μH	AB
C207, 507	VCEAGA0JW107M	J	100μF, 6.3V, 20%, Electrolytic	AB	L304	VP-XF680K0000	J	68μH	AB
C217, 267	RC-KZ0019GEZZ	J	0.1μF, Ceramic	AA	L305	VP-XF330K0000	J	33μH	AB
c239, 251, 552	VCFYSA1HB104J	J	0.1μF, 50V, 5%, Mylar	AB	L306, 307	VP-XF220K0000	J	22μH	AB
C502, 525	VCFYSA1HB333J	J	0.033μF, 50V, 5%, Mylar	AE	L309	VP-XF151K0000	J	150μH	AB
C504	RC-QZA222TAYJJ	J	0.0022μF, Mylar	AB	CAPACITORS				
MISCELLANEOUS					C302, 305	VCFYSA1JA104J	J	0.1μF, 63V, 5%, Mylar	A C
P204	QPLGN0778GEZZ	J	Plug, 7 pin (CE)	AC	MISCELLANEOUS				
P205	QPLGN0329TAZZ	J	Plug, 3 pin (TP501-503)	AB	FB301, 302	RBLN-0013GEZZ	J	Ferrite Bead	AB
SC201, 202, 203	QSOCN0879GEZZ	J	Socket, 8 pin (CD) (CC) (CB)	AC		QPLGN0229TAZZ	J	Plug, 2 pin (TP301-302)	AB
SC501	QSOCN0679GEZZ	J	Socket, 6 pin (CA)	AC		QPLGN0780GEZZ	J	Plug, 7 pin (XA)	AC
HEAD AMP. CIRCUIT						QSOCN0532REZZ	J	Socket, 5 pin (ZA)	AB
PWB-J	DUNTK3483XM54-		Head Amp. Board Assembly	—	OPERATION CIRCUIT				
					PWB-H	DUNTK3627HE50-		Operation Board Assembly	—
					TRANSISTORS				
					Q8101 8105	VSDTA1 24ES/-1	J	DTA124ES	AB

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
DIODES					CONTROLS				
D8101, 8102, 8103, 8105	RH-PX0199GEZZ J		Photo Diode	AB	R610	RVR-M4436GEZZ J10k(B)		PB Level Adj.	AB
D8104	RH-PX0200GEZZ J		Photo Diode	AB	R630	RVR-M4446GEZZ J 470k(B)		Bias Adj.	AB
08106, 8107	VHD1SS1 19//-1 J 1SS119			AA					
					CAPACITORS				
					C604	RC-QZA1 23 TAY J J 0.012μF, 50V, 5%, Mylar			AB
					C610	VCEAGA1AW107M J 100μF, 10V, 20%, Electrolytic			AB
					C616	RC-QZA222TAY J J 0.0022μF, 50V, 5%, A Mylar			B
					C623	VCQPSA2AA562J J 0.0056μF, 100V, 5%, A Polypro Film			C
					C627	VCE9AA1HW105M J 1μF, 50V, 20%, Electrolytic (N.P.)			AB
					C635	RC-QZA682TAY J J 0.0068μF, 50V, 5%, Mylar			AB
					C636	RC-QZA273TAY J J 0.027μF, 50V, 5%, Mylar			AB
MISCELLANEOUS					MISCELLANEOUS				
S8101, 8102, 8103, 8104, 8105, 8106, 8107, 8108, 8109, 8110, 8111	QSW-K0079GEZZ J		Switch, Eject Switch, Record Switch, Pause Switch, Stop Switch, Fast Forward Switch, Play Switch, Rewind Switch, Sound (-) Switch, Sound (+) Switch, Channel (-) Switch, Channel (+)	AB	QPLGN0229TAZZ J Plug, 2 pin (TP601-602) A B				
P8101	QPLGN0780GEZZ J		Plug, 7 pin (HA)	AC	QPLGN0578GEZZ J Plug, 5 pin (BA) A0				
P8102	QPLGN0380GEZZ J		Plug, 3 pin (HB)	AB	QSOCN0579GEZZ J Socket, 5 pin (K601) AC				
					QSOCN0679GEZZ J Socket, 6 pin (K602) AC				
AUDIO CIRCUIT									
PWB-L	RUNTK0677GEZZ - Audio Board Assembly —								
TRANSISTORS					VCR-POWER CIRCUIT				
Q602	VS2C3939SQR-1 J		2C3939SQR	AC	PWB-P	RDENC0480GEZZ - Power Board Assembly —			
Q603, 604	VS2C1740SQR1 E J		2SC1740S(Q.R)	AC					
INTEGRATED CIRCUIT					TRANSISTORS				
IC601	VHiBA7765AS-1 J			AL	△Q901	95KUAD0046AZ J		2SD882	AH
	or				△Q902	95KUAB0020AZ J		2SB1095	AH
	VHiXRA7765A-1 J			AH					
COILS AND TRANSFORMER					INTEGRATED CIRCUITS				
L601	VP-YF822J0000 J		8.2mH	AC	△IC901	95KUCC0042AZ J			AR
L602	VP-DF121 K0000 J		120μH	AB	△IC902	95KUCC0014AK J			AF
T601	RTRNH0053GEZZ J			AE					

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	•	Description	Code
DIODES					c923	95KUGAJ2R2EK	J	2.2μF, 100V, Electrolytic	AB
△D901	95KUBC0213FK	J	RL156	AC	RESISTORS				
△904					△R903	95KUEFG5R6AA	J	5.6 ohm, 5W, Metal Film	AD
△D905	95KUBC0214BK	J	R1200F	AC	△R904	95KUEBBR39AM	J	0.39 ohm, 1/2W, FuseResistor	AC
△D906,	95KUBC0221AK	J	ERA18-02	AC	△R905	95KUEEC683AT	J	68k ohm, 1/2W, Carbon	A A
△907					△908				
△D908,	95KUBA0005KZ	J	15S55	AB	△R909	95KUEEC273AT	J	27k ohm, 1/2W, Carbon	A A
912					△912,				
△D909	95KUBC0143AK	J	EU1Z	A C	△914				
△D910,	95KUBC0212AK	J	S F 2 2	AE	△R913	95KUEFCR39AW	J	0.39 ohm, 1/4W, Metal Film	AA
△913					△R915	95KUEEC180AT	J	18 ohm, 1/2W, Carbon	A A
△D914	95KUBC0182CK	J	10ELS4	AC	AR916	95KUEEB101BF	J	100 ohm, 1/4W, Carbon	A A
COILS AND TRANSFORMER					△R918	95KUEEB103BF	J	10k ohm, 1/4W, Carbon	AA
△L903	95KUKZ0328ZZ	J	Line Filter	AB	MISCELLANEOUS				
△L904	95KUKZ0251ZZ	J	TSL0707-220K1R3	AE	△ICP901	95KPJCBE1001	J	Current Protector, SSFR1A	AF
△L905	95KUKZ0257ZZ	J		AE	△ICP902	95KPJCED2001	J	Current Protector, SSFR2A	A F
△T901	95K129035020J		PTTP40	Ax	A	95KPKZ0194ZZ	J	Connector (PC)	AC
CONTROL						95KPKZ0527ZZ	J	Connector (PA)	AC
△R917	95KUFBA202CD	J	2k(B) AT6.5V Adj.	AC		95KPKZ0540ZZ	J	Connector (PB)	AB
R921	95KUFBA302CM	J	3k(B) PC9V Adj.	AC	△F901	95KPJCTB2001	J	Fuse, T2A/250V	AD
CAPACITORS					△FB901,	95KBFZ89206Z	J	Ferrite Bead	AB
△C901	95KUGZ0687ZZ	J	0.1μF, 250V, Film	AB	△902,				
△C902,	95KUGCZ471B	T J	470pF, 4kV, Ceramic	A C	△903				
△924					INFRARED REMOTE CONTROL CIRCUIT				
△C903	95KUGZ0662ZZ	J	0.047μF, 500V, Ceramic	A E	RRMCG0784GESA - Infrared Remote				Ax
△C905,	95KUGCU101AJ	J	100pF, 1kV, Ceramic	A C	Control Unit				
△908					TRANSISTOR				
△C906	95KUGBQ680BT	J	68μF, 400V, Electrolytic	A P	Q3001	92P35N00059T	J	25C4040	AC
△C907	95KUGAQ010FD	J	1μF, 400V, Electrolytic	A D					
△C909	95KUGAJ100EK	J	10μF, 100V, Electrolytic	A C					
△C910	95KUGAB220HV	J	22μF, 10V, Electrolytic	A E					
△C911	95KUGFJ102EL	J	1000pF, 100V, Film	AB					
△c912	95KUGFF333BQ	J	0.033μF, Mylar	AB					
△c913	95KUGAC101F	D J	100μF, 16V, Electrolytic	A C					
△C914	95KUGAC100HV	J	10μF, 16V, Electrolytic	A F					
△c915	95KUGCS471AA	J	470pF, 500V, Ceramic	A B					
C916	95KUGAD102DW	J	1000μF, 25V, Electrolytic	AF					
C920	95KUGAC102CV	J	1000μF, 16V, Electrolytic	AD					
c922	95KUGAJ220FD	J	22μF, 100V, Electrolytic	A D					

Code	No.	Part No.	*	Description	Code	Ref. No.	Part No.	*	Description		
INTEGRATED CIRCUIT						TRANSISTORS					
IC3001	9 2 P 3 S Q 0 0 1 3 6	J			AL	Q202,	VS2SC1815GW-1	J	2SC1815(G)	AB	
						406,					
						501,					
						601,					
						703,					
						807					
D3001	92P3QH00005G	J		IED	AC	Q301,	VSDTA144ES/-1	J	DTA144ES	AB	
03002	92P3SD00074T	J		DAP215	AC	304					
						Q302,	VS2SD655-DE1	E	J	2SD655(D.E)	AC
3007						303					
FL3001	9 2 P 3 E F 0 0 0 6 3	J		KBR455BTL	AD	Q402,	VS2SA1015Y/1	E	J	2SA1015(Y)	AC
	or					404,					
	9 2 P 3 E F 0 0 0 6 6	J		CSB455EB	AD	605,					
						801,					
						802					
CABINET PARTS						Q403	VS2SA950-Y/1	E	J	2SA950 (Y)	AD
1	92PFA11H9104	J		Cabinet(A)	AH	Q405,	VS2SC3399/-1	J	2SC3399	AB	
2	92PFA11C9734	J		Cabinet(B)	AH	602					
3	92PFA1188841	J		Battery Cover	AD	Q603	VS2SC2456//1	E	J	2SC2456	AE
4	92PFA58A3403	J		Infrared Filter	AC	△Q604	VS2SD1554//1	E	J	2SD1554	AL
5	92PFA62D015	9	J	Indication Plate	AN	△Q701	VS2SC3279//1	E	J	2SC3279	AA
6	92PFA42C6025	J		Rubber Key	AQ	△Q702	VS2SC3279N/-1	J	2SC3279	AC	
7				PWB	—	Q803,	VSDTC124ES/-1	J	DTC124ES	AB	
8	92P3ETFA1001	J		Battery Terminal (C)	A	804,					
9	92P2A502120	J		Screw	AA	805					
10	92P3ETFA0801	J		Battery Terminal (A)	A	B					
						INTEGRATED CIRCUITS					
						IC201	RH-iX0203GEZZ	J		AE	
						IC202	VHiUPC574JT-1	J		AC	
						IC351	RH-iX0241CEZZ	J		AF	
						IC352	VHiTDA7233/-1	J		AF	
						IC451	VHiTA7348P/-1	R		AK	
						IC501	RH-iX0355CEZZ	J		AS	
						IC601	RH-iX0452CEZZ	J		AH	
						△IC701	RH-iX1118CEZZ	J		AQ	
						IC801	RH-iX0969CEN1	J		BG	
						DIODES AND CRYSTALS					
						D351,	VHD1SS1 19//1E	J	1SS119	AA	
						401,					
						405					
						409,					
						453,					
						502,					
						609,					
						709,					
						716,					
						803,					

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
D352	RH-EX031 5CEZZ J Zener Diode			AA	COILS AND TRANSFORMERS				
D451, 452	RH-EXO1 68GEZZ J Zener Diode			AA	L201	VP-DF1 20K0000 J 12μH			AB
D501	RH-EX0384GEZZ J Zener Diode			AA	L352, 705, 706, 707	VP-CF3R3K0000 J 3.3μH			AB
D503	RH-DX0055TAZZ J DX0055TA			AD	L402, 405	VP-DF1 01 K0000 J 100μH			AB
D505, 615, 801, 802	RH-EX0395GEZZ J Zener Diode			AA	L407	VP-MK560K0000 J 56μH			AB
D601, 805, 806, 807	RH-EX0200CEZZ J Zener Diode			AB	L451	VP-DF221 K0000 J 220μH			AB
D605	RH-DXOI 27CEZZ JDX0127CE			AC	L601	RCiLZ0004PEZZ R Linearity Coil			AN
D607	RH-DX0073CEZZ J DX0073CE			AD	L603	RCiLP0088CEZZ J			A t
D608, 611	RH-DXOI 1 OCEZZ J DXOI IOCE			AB	△L703, 801	VP-DF8R2K0000 J 8.2μH			AB
D612	RH-EX0051CEZZ J Zener Diode			AB	△L704	VP-CF271K0000 J 270μH			AB
D620	RH-DX0079TAZZ J DX0079TA			AE	△L708	RCiLF0105CEZZ J Line Filter			AP
△D701, 702, 703, 704	RH-DX0279CEZZ J DX0279CE			AB	L802	VP-DF270K0000 J 27μH			AB
△D705, 711	RH-DX0226CEZZ J DX0226CE			AC	L803	VP-DF220K0000 J 22μH			AB
AD706	RH-DXOI 64CEZZ JDX0164CE			AC	CF401	RFiLC0004TAZZ J Trap, 3.58MHz			AE
△D707	RH-DXOI 31 CEZZ JDX0131CE			AC	CF601	RFiLA0005CEZZ J Osc., 503KHz			AE
△D708	RH-DX0027CEZZ J DX0027CE			AE	DL401	RCiLZ0556CEZZ J Delay Line			AC
△D710, 714, 715	RH-DX0130CEZZ J DX0130CE			AE	DL801	RCiLZ0475CEZZ J Delay Line			AP
D712, 713	RH-DX0224CEZZ J DX0224CE			AB	T601	RTRNZ01 79CEZZ J Horizontal Drive			AE
△D720	RH-EXO1 52CEZZ J Zener Diode			AE	AT602	RTRNF1874CEZZ J F.B.T.			BD
X801	RCR5B0067CEZZ J Crystal			AQ	△T701	RTRNZ0468CEZZ J			AV
X802	RCR5B0001 PEZZ R Crystal			AL	T801	RCiLZ051 I CEZZ J			AD
PACKAGED CIRCUIT					CAPACITORS				
△PR701	RMPTP0040CEZZ J Packaged Circuit			AK	C207, 360, 408, 409, 411, 841	VCFYHA1HA104J J 0.1μF, 50V, 5%, Mylar			AB
CONTROLS					C213	VCEAGA1CW337M J 330μF, 16V, 20% Electrolytic			AC
R425, 526	RVR-B5265CEZZ J 10k(B) Sub-Bright Adj., A V-Lin Adj.			B	C310	VCQYTA1 HM273J J 0.027μF, 50V, 5%, Mylar			AB
R436	RVR-B5269CEZZ J 100k(B) Sub-Cont Adj. A			B	c354, 358, 361, 821	VCEAGA1CW477M J 470μF, 16V, 20%, Electrolytic			AC
R503	RVR-B5270CEZZ J 200k(B) V-Size Adj.			AB	c357, 801	VCEAGA1CW107M J 100μF, 16V, 20%, Electrolytic			AB
R602	RVR-B5438CEZZ J 100(B) H-Cent Adj.			AB	C363, 721, 814	VCQYTA1HM103J J 0.01μF, 50V, 5%, Mylar			AA
R802	RVR-B5266CEZZ J 20k(B) Sub-Colour Adj. A			B	C401	VCE9AA1CW106M J 10μF, 16V, 20%, Electrolytic (N.P)			AB
R806	RVR-B5261CEZZ J 1k(B) DL-AMP. Adj. A			B	C407	VCEAGA0JW107M J 100μF, 6.3V 20%, Electrolytic			AB
Raa2	RVR-B5446CEZZ J 10k(B) Sub-Tint Adj. A			B					

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	•	Description	Code
C418, 831, 836	VCEAGAI CW227M J		220μF, 16V, 20%, Electrolytic	AC	C625	VCEAAA2CW106M J		10μF, 160V, 20%, Electrolytic	AC
c454	VCEAGA1AW107M J		100μF, 10V, 20%, Electrolytic	AB	C633	VCEAGA0JW337M J		330μF, 6.3V, 20%, Electrolytic	AB
C502	VCEAGAI VW107M J		100μF, 35V, 20%, Electrolytic	AC	△C701	RC-FZ0087CEZZ J		0.1μF, AC250V, Metalized Plastic Film	AH
C503	VCEAGA1VW477M J		470μF, 35V, 20%, Electrolytic	AD	△C702	RC-KZ0029CEZZ J		0.01μF, AC250V, Ceramic	AC
C505	VCQYTA1HM392J J		3900pF, 50V, 5% . Mylar	AA	△706, △711				
C506, 617	VCKYPA2HB221 K J		220pF, 500V, 10%, Ceramic	AA	△C707	RC-EZ0055CEZZ J		150μF, 400V, Electrolytic	AN
C510	VCSATA1VE225K J		2.2μF, 35V, 10%, Tantalum	AC	△C709	VCQPSC2JA333K J		0.033μF, 630V, 10% . Polypro Film	AB
C512	VCEAGAI EW108M J		1000μF, 25V, 20%, Electrolytic	AD	△C714, 722	RC-KZ0024CEZZ J		0.001μF, 2kV, Ceramic	A C
C513	VCFYHA1HA224J J		0.22μF, 50V, 5% . Mylar	AC	△C715	VCEAGA2AW106M J		10μF, 100V, 20%, Electrolytic	AC
c515, 634, 815	VCE9AA1 HW105M J		1.0μF, 50V, 20%, Electrolytic (N.P)	AB	△C716	VCEAGA1 JW476M J		47μF, 63V, 20%, Electrolytic	AB
C516, 835	VCSATA1VE475K J		4.7μF, 35V, 10% . Tantalum	AD	△C717, △729	VCKYPA2HB561 K J		560pF, 500V, 10%, Ceramic	AA
C517	VCQYTAI HM822J J		8200pF, 50V, 5%, Mylar	AA	△C718	VCKYAT1 EX103N J		0.01μF, 25V, 30%, Ceramic	AA
C601, 603	VCQYTA1 HM223J J		0.022μF, 50V, 5%, Mylar	AA	△C719	VCE9AA1 HW335M J		3.3μF, 50V, 20%, Electrolytic (N.P)	AE
C602, 607	VCQYTAI HM333J J		0.033μF, 50V, 5%, Mylar	AA	AC721	VCQYTA1HM103J J		0.01μF, 50V, 5%, Mylar	AA
C608	VCFYSB2EB223K J		0.022μF, 250V, 10% . Mylar	AC	C723	VCEAAH2CW1 07M J		100μF, 160V, 20%, Electrolytic	AE
C610, 621, 622, 624, 627, △710, 724, 727	VCKYPA2HB102K J		1000pF, 500V, 10%, Ceramic .	AA	C725	VCEAGA1 EW337M J		330μF, 25V, 20%, Electrolytic	AC
C611	VCKYPA2HB101K J		100pF, 500V, 10%, Ceramic	AA	C726	VCEAAA1CW108M J		1000μF, 16V, 20%, Electrolytic	AD
C613, △712, △713	VCKYPH3DB561K J		560pF, 2kV, 10%, Ceramic	AC	△C728	VCCSPA1 HL820J J		82pF, 50V, 5%, Ceramic	AA
C616	VCFPPD3CA682H J		6800pF, 1.6kV, 0%, + 50%. Metalized Polypro Film	AE	△C730	VCQYTAI HM562J J		5600pF, 50V, 5%, Mylar	AA
C618	VCFPPD2DB394J J		0.39μF, 200V, 5%, Metalized Polypro Film	AE	△C732, △733	RC-KZ0023CEZZ J		4700pF, 2kV, Ceramic	AD
C619	VCEAGA1 EW477M J		470μF, 25V, 20%, Electrolytic	AD	c734	RC-KZ0019GEZZ J		0.1μF, 25V, Ceramic	AA
C620	VCFPPD2DB474J J		0.47μF, 200V, 5%, Metalized Polypro Film	AE	C813, 818	VCFYHA1 HA563J J		0.056μF, 50V, 5%, Mylar	AB
C623	VCQYSH2DM104K J		0.1μF, 200V, 10%, Mylar	AD	RESISTORS				
					△R356	VRG-RF2EB560J J		56, 1/4W, Fuse Resistor	A B
					△R522	RR-XZ0035TAZZ J		22, 1/4W, Fuse Resistor	A B
					R613	VRS-SV3DB182J J		1.8k, 2W, Metal Oxide	A A
					R614	VRS-SV3DB152J J		1.5k, 2W, Metal Oxide	A A
					△R622	VRG-RL2HB181J J		180, 1/2W, Fuse Resistor	A B
					R623, △701	VRW-KX3HC6R8K J		6.8, 5W, Cement	AC
					AR625	VRG-RL2HB3R3JJ		3.3, 1/2W, Fuse Resistor	AB
					R626	VRS-SU2HB102J J		1.0k, 1/2W, Metal Oxide	A A
					R636	VRG-RF2EB2R2J		2.2, 1/4W, Fuse Resistor	AB

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
R638	VRN-RV3AB2R2J	J	2.2, 1W, Metal Film	AB	P1001	QPLGN0879GEZZ	J	Plug, 8 pin (K1001)	A B
AR639	VRG-RL2HB220J	J	22, 1/2W, Fuse Resistor	AB	PI002	QPLGN0679GEZZ	J	Plug, 6 pin (K1002)	AB
AR647	VRG-RL2HB5R6J	J	5.6, 1/2W, Fuse Resistor	AB	PI003	QPLGN1079GEZZ	J	Plug, 10 pin (K1003)	AB
△R702	VRG-RL2HB470J	J	47, 1/2W, Fuse Resistor	AB	P1004	QPLGN0579GEZZ	J	Plug, 5 pin (K1004)	AB
AR703	VRS-VV3DB272J	J	2.7k, 2W, Metal Oxide	AA					
△R704	VRS-SV3LB124J	J	120k, 3W, Metal Oxide	AC					
△R705	VRD-RM2HD2R7J	J	2.7, 1/2W, Carbon	AA					
△R706,	VRD-RM2HD2R2J	J	2.2, 1/2W, Carbon	AA					
△707									
△R708	VRG-RL2HB100J	J	10, 1/2W, Fuse Resistor	AB					
AR709	VRD-RM2HD473J	J	47k, 1/2W, Carbon	AA					
△R710,	VRD-RM2HD823J	J	82k, 1/2W, Carbon	AA					
△711									
△R712	VRD-RM2HD330J	J	33, 1/2W, Carbon	AA					
△R713	VRD-RM2HD820J	J	82, 1/2W, Carbon	AA					
△R714	VRD-RM2HD181J	J	180, 1/2W, Carbon	AA					
△R715	VRS-VV3AB331J	J	330, 1W, Metal Oxide	AA					
△R716	VRD-RA2BE102J	J	1.0k, 1/8W, Carbon	AA					
△R717	VRD-RA2EE561G	J	560, 1/4W, Carbon	AA					
△R718	VRD-RA2EE331J	J	330, 1/4W, Carbon	AA					
△R719	VRD-RA2EE472J	J	4.7k, 1/4W, Carbon	AA					
△R720	VRG-RL2HB2R2J	J	2.2, 1/2W, Fuse Resistor	AB					
△R721	VRD-RA2EE3R3J	J	3.3, 1/4W, Carbon	AA					
△R722	VRN-VV3DB8R2J	J	8.2, 2W, Metal Film	AB					
△R726,	VRC-UA2HG825K	J	8.2M, 1/2W, Solid	AA					
△727									
MISCELLANEOUS PARTS					CRT UNIT				
△F701	QFS-C2024CEZZ	J	Fuse, T2A/250V	AD	PWB-H	DUNTK6851 WEYO	-	CRT Board Assembly	—
	QFSDH1002CEZZ	J	Fuse Holder	AA					
△RY701	RRLYZ0020CEZZ	J	Relay, Power	AN					
S401,	QSW-B0015CEZZ	J	Service Switch,	AC					
501			Vertical Centering						
			Control						
△S701	QSW-P0418CEZZ	J	Main Power Switch	AK					
	RiFU-0568GEZZ	J	IF-Pack	A x					
△J451	QJAKG0003GEZZ	J	AN Jack	AE					
FB601,	RBLN-0037CEZZ	J	Ferrite Bead	AB					
602,									
△701,									
△703									
△FB702	RBLN-001 OCEZZ	J	Ferrite Bead	AC					
P301,	QPLGN0478GEZZ	J	Plug, 4 pin (VD),	AB					
304			(VA)						
P302	QPLGN0878GEZZ	J	Plug, 8 pin (VC)	AC					
P303	QPLGN0778GEZZ	J	Plug, 7 pin (VB)	AC					
△P601	QPLGN0505CEZZ	J	Plug, 5 pin (F)	AB					
△P701,	QPLGN0304CEZZ	J	Plug, 3 pin (A),	AB					
△702,			(B),						
△704			(X)						
△P703	QPLGN0207CEZZ	J	Plug, 2 pin (G)	AA					
P853	QPLGN0341CEZZ	J	Plug, 3 pin (H)	AA					
P854	QPLGN0541CEZZ	J	Plug, 5 pin (K)	AB					
TRANSISTORS									
					Q851,	VS2SC2229O/1 E	J	2SC2229 (O)	AD
					852,				
					853				
COIL									
					L851	VP-CF681K0000	J	680μH	AB
CONTROLS									
					R853,	RVR-B4567CEZZ	J	5k(B) Red Bias,	AC
					859,			Green Bias,	
					865			Blue Bias	
					R857,	RVR-B4563CEZZ	J	300(B) Green Drive,	AD
					863			Blue Drive	
CAPACITORS									
					AC854	RC-KZ0023CEZZ	J	4700pF, 2kV, Ceramic	A D
					C855	VCEAAA2DW106M	J	10μF, 200V, Electrolytic	AC
RESISTORS									
					R855,	VRC-MA2HG272K	J	2.7k, 1/2W, Solid	AA
					861,				
					867				
					R860,	VRS-VV3DB153J	J	15k, 2W, Metal Oxide	AA
					866,				
					868				

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
MISCELLANEOUS PARTS					1034,				
△SC851	QSOCV0829CEZZ	J	CRT Socket	AK	1035,				
P851	QPLGN0341 CEZZ	J	Plug, 3 pin (H)	AA	1036				
P852	QPLGN0541 CEZZ	J	Plug, 5 pin (K)	AB	D1019,	RH-EX0024CEZZ	J	Zener Diode	AB
					1020,				
					1027				
					TH1001	RH-HZ0005CEZZ	J	Thermistor	AB
					x1001	RCRSB0090GEZZ	J	Crystal	AE
TIMER UNIT					CONTROL				
PWB-T	DUNTK7215WEV2		Timer Board Assembly	—	R1001	RVR-M4158GEZZ	J	680(B) Dot Clock Adj.	A8
TRANSISTORS					COIL AND FILTER				
Q1001,	VS2SA933SQR1E	J	2SA933S(Q.R)	AB	FL1001	RFILC0091GEZZ	J	Filter	AD
1010					L1001	VP-XF1 20K0000	J	12μH	AB
91002	VSDTC124ES/-1	J	DTC124ES	AB					
Q1003	VS2C1 740SQRI E	J	2SC1740S(Q.R)	AC					
1009									
INTEGRATED CIRCUITS					CAPACITORS				
IC1001	RH-iX0608GEZZ	J		AW	C1012	VCEAGA0JW477M	J	470μF, 6.3V, 20%, Electrolytic	AB
	or				C1013,	RC-KZ0019GEZZ	J	0.1μF, Ceramic	AA
	RH-iX0609GEZZ	J		AZ	1028,				
ICI002	RH-iX1636CEZZ	J		AL	1033				
ICI003	VHiPST529i2-1	J		AD	C1019,	VCFYSA1HB334J	J	0.33μF, 50V, 5%, Mylar	AB
					1020				
					CI021	VCFYSA1HB104J	J	0.1μF, 50V, 5%, Mylar A	B
DIODES AND CRYSTAL					RESISTOR				
D1002,	VHD1SS1 19// -1	J	1SS119	AA	R1010	VRN-RA2BK822F	J	8.2k, 1/8W, 1%, Metal Film	AA
1003,	or								
1005,	RH-DX0053GEZZ	J		AA					
1009,									
1010,									
1015,									
1021									
1025,									
1028,									
1029,									
1030,									
1032,									
1033									
D1016,	RH-EX0089CEZZ	J	Zener Diode	AB					
1017,									
1018,									
1026,									
MISCELLANEOUS PARTS					FB1001	RBLN-0014GEZZ	J	Ferrite Bead	AB
					F B 1 0 0 2 ,	RBLN-0019CEZZ	J	Ferrite Bead	AB
					1003,				
					1004				
					P1005	QPLGN1080GEZZ	J	Plug, 10 pin (TE)	AC
					P1006	QPLGN0880GEZZ	J	Plug, 8 pin (TF)	AC
					P1007	QPLGN0780GEZZ	J	Plug, 7 pin (TG)	AC
					PI008	QPLGN0580GEZZ	J	Plug, 5 pin (TH)	AB
					PI009	QPLGN0241CEZZ	J	Plug, 2 pin (TS)	AA

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	•	Description	Code
PI010	QPLGN0278GEZZ J		Plug, 2 pin (TI)	AA	TIMER CONTROL (2) CIRCUIT				
SC1001	QSO CN0879GEZZ J		Socket, 8 pin (TA)	AC	PWB-U Board	DUNTK7217WEV0 -		TIMER CONTROL (2) Assembly	—
SC1002	QSO CN0679GEZZ J		Socket, 6 pin (TB)	AC					
SC1003	QSO CN1079GEZZ J		Socket, 10 pin (TC)	AC					
SC1004	QSO CN0579GEZZ J		Socket, 5 pin (TD)	AC					
TIMER CONTROL (1) CIRCUIT					TRANSISTOR				
PWB-S	DUNTK7216WEV0	-	TIMER CONTROL (1) Board Assembly	—	41071	VSDTC124ELT-1 J		DTC124EL	AA
DIODES					DIODE				
D1051	VHD1SS119// -1J		SS119	AA	D1071	RH-PX01 96GEZZ J		Photo Diode	AC
	or				MISCELLANEOUS PARTS				
1054	RH-DX0053GEZZ J			AA	S1071	QSW-K0079GEZZ J		Switch, Power	AB
						RRMCU0037GEZZ J		Remote Control Receiver	AL
						or			
						RRMCU0041 GEZZ J			AM
					PI061	QPLGN0580GEZZ J		Plug, 5 pin (UA)	AB
CONTROLS					THE OTHER PART				
R1096	RVR-B4350GEZZ J		10k(B) Picture Tone A	C	⚠	QACCL3001 PEZZ R		AC Cord	AQ
R1098	RVR-B4262GEZZ J		10k(B) Tint	AD					
COIL									
L1101	VP-CF3R3K0000 J		3.3μH	AB					
MISCELLANEOUS PARTS					MECHANISM CHASSIS PARTS				
51051,	QSW-K0079GEZZ J		Switch, System,	AB	1	PGiDS0023GEFW J		Retaining Guide	AE
1052,			Control,		2	MSPRC0142GEFJJ		Retaining Guide	AA
1053,			Preset,					Spring	
1054,			MT ⊕,		3	MLEVC0022GEZZ J		Half-Loading Lever	AF
1055,			MT ⊖,		4	MSPRT0270GEFJJ		Half-Loading Lever	AA
1056			All Clear					Spring	
S1057	QSW-S0193GEZZ J		Switch, Blue Back	AC	5	MLEVF0284GEFW J		Half-Loading Drive	AC
			ON/OFF SW.					Lever	
J1101	QJAKJ0007TAZZ J		JACK, Phone	AC	6	MSPRT0269GEFJJ		Half-Loading	AA
P1051	QPLGN1080GEZZ J		Plug, 10 pin (SA)	AC				Reciprocating Spring	
P1052	QPLGN0480GEZZ J		Plug, 4 pin (SB)	AB	7	MLEVF0283GEZZ J		Half-Loading	AB
P1053	QPLGN0280GEZZ J		Plug, 2 pin (SC)	AB				Reciprocating Lever	
					8	MSPRC0144GEFJ J		Azimuth Spring	AA
					9	RHEDU0070GEZZ J		Audio/Control Head A	S
					Ass'y				

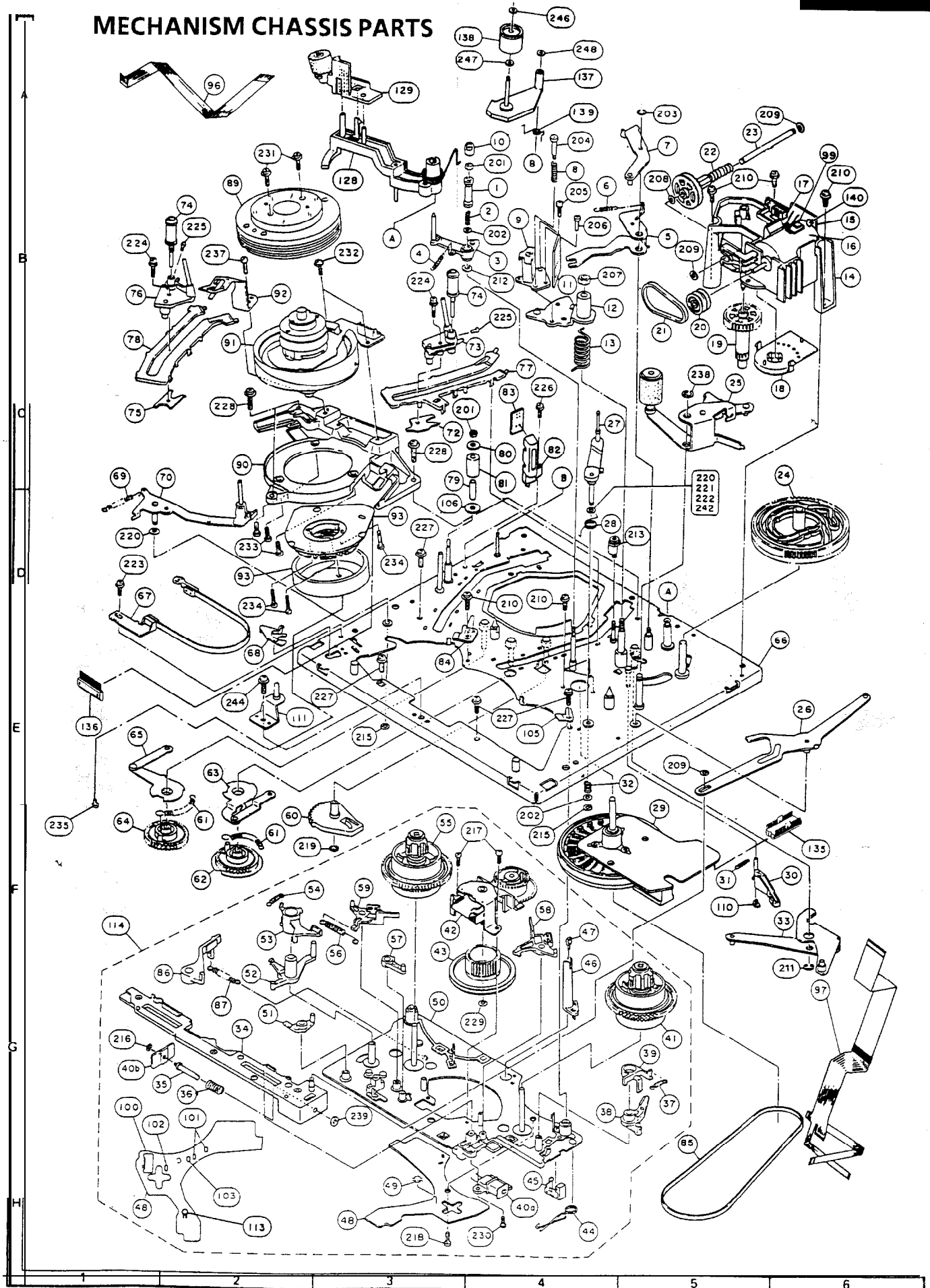
Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
10	PCAPS1015GEZZJ		Retaining Guide Cap A A	A	56	MSPRT0272GEFJ J		Main Brake Spring	AC
11	QPWBF2888GEZZJ		Audio/Control Head AB	AB	57	MLEVP0135GEZZJ		intermediate Lever	AC
			PWB		58	MLEVP0129GEZZJ		Main Take-Up Brake	AE
12	MLEVF0292GEZZJ		Audio/Control Head AD	AD				Lever	
			Arm		59	MLEVP0128GEZZJ		Main Supply Brake	AE
13	MSPRD0087GEFJJ		Audio/Control Head AA	AA				Lever	
			Arm Spring		60	NGERH1121GEZZJ		Loading Relay Gear	AA
14	LHLDZ1606GEZZJ		Loading Block Holder	AC	61	MSPRT0271GEFJJ		Loading Reciprocating	AA
			Ass'y					Spring	
15	QPRBF3409GEZZJ		Loading Block PWB	AD	62	NGERH1120GEZZJ		Take-Up Loading Gear	AA
16	RMOTM1049GEZZJ		Loading Motor	AM	63	MLEVF0304GEZZJ		Take-Up Loading Arm	AC
17	QPLGN0780GEZZJ		Plug, 7 pin (MG)	AC				Ass'y	
18	QSW-R0026GEZZJ		Cam Switch	AE	64	NGERH1119GEZZJ		Supply Loading Gear	AA
19	NGERW1032GEZZJ		Worm Wheel	AC	65	MLEVF0303GEZZJ		Supply Loading Arm	AC
20	NPLYV0133GEZZJ		Loading Motor Pulley	AC				Ass'y	
21	NBLTK0058GE00J		Loading Belt	AA	66	LCHSM0127GEZZJ		Main Chassis Ass'y	AR
22	NGERW1031GEZZJ		Worm Ass'y	AC	67	LBNDK1002GEZZJ		Tension Band Ass'y	AD
23	NSFTG0045GEFJJ		Worm Shaft	AB	68	LHLDZ1607GEZZJ		Tension Spring Hook	AA
24	NGERH1129GEZZJ		Master Cam	AC				Plate	
25	MLEVF0281GEZZJ		Pinch Roller Lever	AN	69	MSPRT0275GEFJ J		Tension Spring	AA
			Ass'y		70	MLEVF0291GEZZ J		Tension Arm Ass'y	AF
26	MLEVF0348GEZZJ		Relay Shifter Lever	AD	72	MSLiF0049GEFWJ		Take-Up Pole Base	AB
27	MLEVC0033GEZZJ		Reverse Guide	AG				Slider	
28	MSPRD0086GEFJ J		Reverse Guide Spring A	A	73	LPOLM0037GEZZJ		Take-Up Pole Base	AG
29	RMOTN2038GEZZJ		Capstan D.D. Motor	AZ				Ass'y	
30	MLEVP0136GEZZJ		Slow Brake Lever	AA	74	NROLP0062GEZZJ		Guide Roller Ass'y	AE
31	MSPRT0329GEFJ J		Slow Brake Spring	AA	75	MSLiF0048GEFWJ		Supply Pole Base Slider	AB
32	MSPRC0151GEFJ J		Reverse Guide Spring A	A	76	LPOLM0036GEZZJ		Supply Pole Base Ass'y	AC
33	MLEVF0350GEZZJ		Relay Gear Drive Lever	AF	77	PGiDM0066GEZZJ		Take-Up Loading Rail	AB
34	MSLiF0043GEZZ J		Brake Shifter	AK	78	PGiDM0067GEZZJ		Supply Loading Rail	AB
35	NSFTZ0068GEFDJ		Brake Lock Shaft	AC	79	NSFTL0563GEFWJ		Supply Impedance	AC
36	MSPRC0143GEFJJ		Absorber Plate Spring A B	B				Roller Innor	
37	MSPRT0274GEFJ J		Video Search Spring A	B	80	PGiDH0031GEFW J		Supply Impedance	AA
38	MLEVP0181GEZZJ		Video Search Brake	AA				Roller Flange	
			Lever		81	NROLP0084GEZZJ		Supply Impedance	AC
39	MLEVP0131GEZZ J		Video Search	AC				Roller	
			Reciprocating Lever		82	RHEDT0030GEZZJ		Full Erase Head Ass'y	AH
40	RPLU-0083GEZZ J		Brake Solenoid Ass'y A F	F	83	QPWBF2936GEZZJ		Full Erase Head PWB	AA
41	NDAiV1046GEZZJ		Take-Up Reel Disk	AG	84	LANGA0054GEZZJ		Supply Reel Retainer	AD
			Ass'y					Ass'y	
42	NGERH1128GEZZJ		Idler Gear Ass'y	AN	85	NBLTK0059GE00 J		Reel Belt	AB
43	NPLYV0134GEZZJ		Reel Pulley	AC	86	MLEVP0146GEZZJ		Auxiliary Fast-Forward	AE
44	MSPRD0085GEFJ J		Shifter Spring	AB				Brake Lever	
45	PCOVP1018GEZZJ		Shifter Spring Cover	AC	87	MSPRT0282GEFJJ		Auxiliary Fast-Forward	AB
46	LHLDP1092GEZZJ		Cassette LED Holder A	E				Brake Spring	
47	RH-PXO180GEZZJ		Cassette LED	AD	89	DDRMU0002HE17J		Upper Drum Ass'y	BE
48	QPWBF2977GEZZJ		Reel Sensor PWB	AK	90	PGiDC0039GEFWJ		Drum Base	AL
49	RH-PX0181GEZZ J		Reel Sensor	AE	91	DDRML0012HE01J		Lower Drum Ass'y	BB
50	LCHSS0016GEZZJ		Reel Block Chassis	AL	92	QBR5K0021GEZZJ		Earth Brush Ass'y	AC
51	MLEVP0134GEZZ J		Tension Adjusting	AC	93	RMOTP1107GEZZJ		Drum D.D. Motor	AW
			Lever					Ass'y	
52	MLEVP0195GEZZJ		Tension Release Lever	AC	96	QCNW-6389GEZZ J		Full Flat Cable	AE
53	MLEVP0132GEZZJ		Back Tension Lever	AC				(Drum D.D. Motor)	
54	MSPRT0273GEFJJ		Back Tension Lever	AB	97	QCNW-6390GEZZ J		Full Flat Cable	AK
			Spring					(Capstan D.D. Motor)	
55	NDAiV1047GEZZJ		Supply Reel Disk Ass'y	AH	99	RDTCHOO18GEZZJ		Dew Sensor	AG

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
100	QSOEN0534REZZ	J	Socket, 5 pin (MF)	AC	320	MSPRT0279GEFJ	J	Clutch Lock Lever	AA
101	VRS-TW2ED221J	J	220 ohm, 1/4W, 5%, Metal Oxide	AA	321	MLEVP0139GEZZ	J	Spring	AA
102	VCKYTV1HB102K	J	0.001μF, 50V, 10%, Ceramic	AA	322	MSPRD0092GEFJ	J	Clutch Release Lever	AA
103	VRS-TV1 JD473J	J	47k ohm, 1/16W, 5%, A Metal Oxide	A	323	MLEVP0138GEZZ	J	Spring	AA
105	LANGA0051GEFW	J	Take-Up Reel Disk Catch Holder	AB	324	NPLYV0135GEZZ	J	Clutch Lever	AA
106	PGIDS0027GEZZ	J	Supply Impedance Roller Flange L	AA	325	NBLTK0060GE00	J	Pulley	AA
110	PCAPS1018GEZZ	J	Slow Brake Shaft Cap	AA	326	LANGF9392GEFW	J	Cassette Loading Belt	AB
111	LANGF7061 GEZZ	J	Release Pin Angle Ass'y	AC	327	LHLDX1011GE00	J	Upper Plate	AF
114	CCHSS001 8GE02	J	Reel Block Ass'y	AZ	328	MSPRP0097GEFJ	J	Slider Holder (Left)	AB
128	CLEVP0208GE00	J	AHC Drive Lever Ass'y	AE	329	LANGF9357GEFW	J	Cassette Spring	AA
129	CLEVP0209GE00	J	AHC Roller Ass'y	AC	330	MSPRT0281GEFJ	J	Slider Lock (Left)	AA
135	94SSEE0193731A	J	Capstan DDIC	AU	331	MSLiF0044GEFW	J	Slider Lock Spring	AA
136	94SSEE0193721A	J	Drum Motor DDIC	AU	332	MLEVP01 37GE00	J	Slider	AF
137	MARMP0050GEZZ	J	Impedance Roller Arm Ass'y	AD	333	MSPRD0093GEFJ	J	Lock Release Lever	AA
138	NROLP0066GEZZ	J	impedance Roller Ass'y	AD	334	MLEVP0143GE00	J	Lock Release Lever	AA
139	MSPRD0096GEFJ	J	Full Erase Head Arm Spring	AA	335	LANGF9356GEFW	J	Spring	AA
140	VCKYPA1HF103Z	J	0.01μF, 50V, +80%~ -20%, Ceramic	AA	336	LHLDX1010GE00	J	Slider Lock Cover	AA
CASSETTE HOUSING CONTROL PARTS					337	NGERW1035GEZZ	J	Slider Lock (Right)	AA
	CHLDX3050GE61	J	Cassette Housing Control Assembly	AY	338	MSPRD0089GEFJ	J	Slider Holder (Right)	AB
301	HDECQ0779GESA	J	Cassette Cover	AL	339	LHLDX1009GE00	J	Drive Gear (Left)	A8
302	PGIDM0069GE00	J	Down Guide	AC	340	NSFTD001 5GEFD	J	Drive Gear Spring	AA
303	QSW-F0034GEZZ	J	Cassette Erase Protection Switch	AC	341	MSPRD0090GEFJ	J	Cassette Housing	AF
304	LHLDX1008GE00	J	Cassette Housing Frame (Right)	AF	342	QPWBF3194GEZZ	J	Frame (Left)	AD
305	MARMP0038GE00	J	Cassette Cover Arm	AA	343	QPWBF2894GEZZ	J	Main Shaft	AD
306	NGERW1 036GEZZ	J	Phase Gear	AA	344	RH-PX01 76GEZZ	J	Cassette Cover Spring	AA
307	MSPRD0088GEFJ	J	Drive Gear Spring (Right)	AA	345	VS2SA937-Q/-1	J	Start Sensor PWB	AC
308	NGERW1034GEZZ	J	Drive Gear (Right)	AB	346	QSOEN0595GEZZ	J	End Sensor PWB	AB
309	MSPRT0277GEFJ	J	Reciprocating Spring	AA	347	VRD-RA2BE1 53J	J	Phototransistor	AE
310	NGERW1033GEZZ	J	Worm Wheel Gear	AB	348	VRD-RA2BE223J	J	Transistor	AC
311	MLEVP0142GE00	J	Open Lever	AA	349	VRD-RA2BE332J	J	Socket, 5 pin	AB
312	MSPRD0091 GEFJ	J	Open Lever Spring	AA	350	VRD-RA2BE472J	J	15k ohm, 1/8W, 5%. Carbon	AA
313	MLEVP0141GEZZ	J	Switching Lever	AA	351	VRD-RA2BE103J	J	22k ohm, 1/8W, 5%. Carbon	AA
314	MSPRT0280GEFJ	J	Switching Lever Spring	AA	352	RC-KZ0028GEZZ	J	3.3k ohm, 1/8W, 5%, Carbon	AA
315	QSW-F0040GEZZ	J	Cassette Switch	AD	353	VSDTC124F/-1	J	4.7k ohm, 1/8W, 5%, Carbon	AA
316	LANGF9355GEFW	J	Worm Bracket	AB	401	LX-WZ1020GE00	J	10k ohm, 1/8W, 5%. Carbon	AA
317	NBRGP0013GEZZ	J	Bearing	AA	402	LX-HZ3046GEFD	J	0.047μF, 16V, 20%, Ceramic	AA
318	NSFTD0016GEFD	J	Worm Shaft Ass'y	AC	403	LANGK0146GEFW	J	Transistor	AC
319	MLEVP0140GEZZ	J	Clutch Lock Lever	AA	404	XBPSD26P04WS0	J	Cut Washer (4.2W-6.0-0.5)	AA
					405	VCKYD41CY103N	J	Screw (B Tight BTN3P+6S)	AA
					406	QEARB0001GEZZ	J	Main PWB Auxiliary Angle	AF
					407	NPLYV0137GEZZ	J	Screw (2.6P+4S)	AA
								0.01μF, 16V, 30%, Ceramic	AA
								Earth Spring	AF
								Coupling	AA

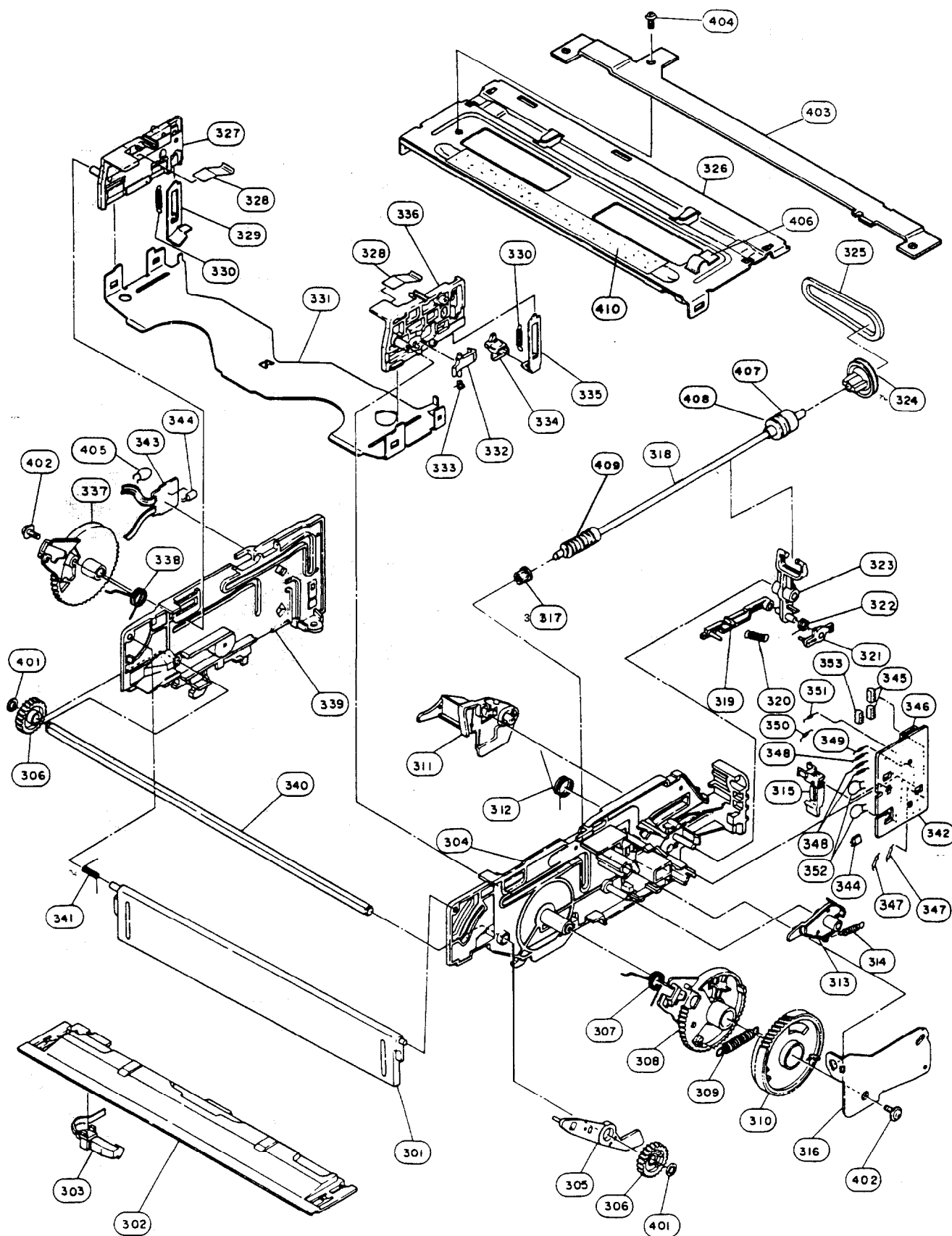
Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
408	NPLYV0136GEZZ J		Clutch	AA	TV SECTION MECHANICAL PARTS				
409	NGERW1037GEZZ J		Worm	AA	649	TCAUS0021 PEZZ R		Caution Label	AB
410	PSPAH0069GEZZ J		Spacer	AB	650	LX-BZ3100CEFD J		Screw	AA
SCREWS, NUTS, AND WASHERS					651	CCABA2125WEV4R		Front Cabinet Ass'y	BM
201	XNFSD20-16000 J		Adjusting Nut	AA	652	GDORF0125PESAR		Front Door	AR
202	XWHSD26-05060 J		Washer W2.6S-6-0.5	AA	653	GMADT0069PESAR		Window Cover	AQ
203	XRESJ20-04000 J		E Ring-2	AA	654	HBDGB0010PESA R		Badge "SHARP"	AC
204	LX-BZ3095GEFD J		AC Head Screw	AA	655	HDECP0001 PESA R		Decoration Sheet	AC
205	XBPSD26P06000 J		Azimuth Adjusting Screw	AA	656	JBTN-0075PESA R		Button	AD
206	LX-BZ3096GEFD J		Tilt Adjusting Screw	AA	657	LHLDW001 1 PEZZ R		Holder	AB
207	XNFSD40-31000 J		Adjusting Nut (A/C Head)	AB	658	LX-TZ3004CEFD J		Screw	AA
208	LX-WZ1048GEZZ J		Washer W3.1-5.4-0.5	AA	659	PKAi-0001 PEOO R		Push Latch	AF
209	LX-WZ1041GE00 J		Washer W2.6-6-0.5 (LM)	AA	660	PSPAG0162CE00 J		Spacer	AA
210	XHPSD26P06WS0 J		Screw C2.6P+6S	AA	661	TCAUA0002PEZZR		Label "CAUTION"	AB
211	XRESJ30-06000 J		E Ring-3	AA	662	QCNW-1186PEZZR		Cable (TS)	AH
212	XWHJZ45-02060 J		Washer W4.5P-6-0.25	AA	663	VSP0080P-E78A J		Speaker	AR
213	LX-NZ3046GEFW J		Adjusting Nut	AB	664	CCABB2123WEV2R		Rear Cabinet Ass'y	BQ
215	LX-WZ1003GE00 J		Washer CW2.1-5-0.5	AA	665	HiNDP0122PESA R		Indication Sheet	AF
216	XRESJ12-03000 J		E Ring-1.2	AA	666	PSPAH002 1 PEOO R		Spacer	AD
217	XHPSD26P03000 J		Screw S2.6P+3S	AA	667	PSPAH0022PE00R		Spacer	AA
218	XHPSD20P03000 J		Screw 2P+3S	AA	668	PSPAH0023PE00R		Spacer	AB
219	XRESJ25-04000 J		E Ring-2.5	AA	669	PSPAH0024PE00R		Spacer	AB
220	XWHJZ25-05050 J		Washer W2.6-5-0.5	AA	670	CPNLC0052WEV0R		Side Panel Ass'y	AP
221	XWHJZ25-01050 J		Washer W2.6-5-0.13	AA	671	HiNDP0121 PESA R		Indication Sheet	AH
222	XWHJZ25-02050 J		Washer W2.6-5-0.25	AA	672	LHLDWF0007PEZZ R		Side Panel Holder	AE
223	LX-HZ3043GEZZ J		Screw W2.6+6S	AA	673	XTASD40P16000 J		Screw	AA
224	LX-BZ3099GEZZ J		Screw WSW2P+11S (W5)	AB	674	XBPSD30P08KS0 J		Screw	AA
225	LX-XZ3030GEFD J		Screw M2x4	AC	675	XTASB40P20000 J		Screw	AA
226	XHPSD26P08WS0 J		Screw C2.6P+8S	AA	676	LX-TZ0004PEFDR		Screw	AD
227	XJPSD26P08WS0 J		B Tight Screw C2.6P+8S	AA	677	LHLD0001 PEZZ R		ADG Coil Holder	AC
228	XHPSD30P08WS0 J		Screw C3P+8S	AA	678	RCiLG003 1 PEZZ R		ADG Coil	AN
229	LX-WZ1040GE00 J		Washer CW2.5-6-0.5	AA	679	MSPRT0001 PEFJ R		Spring	AC
230	XJBSD20P06000 J		B Tight Screw 2P+6S	AA	680	EWBC-L920WEV1J		Earth Wire Ass'y	AE
231	LX-BZ3039GEFN J		Screw WSW3P+1 OS-6W	AA	681	VB34JRH61X/*S J		C R T	CB
232	LX-HZ3056GEFD J		Screw S3P+8S-6W	AA	682	GCOVH0012PESAR		Cord Hold Plate	AD
233	XBPSD30P08J00 J		Screw SW3P+8S	AA	683	LHLDK0002PEK0 R		Cord Holder	AA
234	XBPSD26P12J00 J		Screw SW2.6P+12S	AA	684	JBTN-0076PESA R		Button, Main Switch	AC
235	XBPSD30P05J00 J		Screw SW3P+5S	AA	685	LHLDW1088GEZZ J		Cable Holder	AA
237	XHPSD30P06000 J		Screw S3P+6S	AA	686	LX-BZ3049GEFD J		Screw	AB
239	LX-WZ1042GE00 J		Washer CW2.7-7-0.5	AA	687	LHLDZ0036PEKZR		Holder	AC
242	XWHJZ25-04050 J		Washer W2.6-5-0.4	AA	688	LHLDW1142CEZZ J		Cable Holder	AB
244	XHPSD30P04WS0 J		Screw C3P+4S	AA	689	DUNTK7217WEV0-		Control 2 Unit	—
246	LX-WZ1044GE00 J		Washer 1.6W4-0.5	AA	690	DUNTK7216WEV0-		Control 1 Unit	—
247	XWHJZ21-05050 J		Washer 2.1 W5-0.5	AA	691	LCHSM0022PE00R		Frame	AL
248	LX-WZ1006GE00 J		Washer 2.5W5.4-0.5	AA	692	LHLDW1019PEZZR		Holder	AB
					693	PSPAN0004PEZZR		Spacer	AB
					694	LHLDW1060PEZZR		Holder	AA
					695	LHLDW1037PEZZR		Holder	AB
					696	TLABZ0827GEZZ J		Feature Label	AG
					697	TLABM0603PEZZR		Model Label	AB
					698	PSPAH0028PE00R		Spacer	AA
					699	PSPAH0027PE00R		Spacer	AA

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
VCR SECTION MECHANICAL PARTS					618	LHLDZ1764GEZZ J		Holder	AD
601	GCABB1 11 6GEZZ J		Main Frame	AU	619	LANGK01 46GEFW J		Holder	AF
602	PSLDM4365GEFW J		Top Shield	AR	620	LHLDZ1761GEZZ J		Rail (Right)	AG
603	PSLDM4366GEFW J		Bottom Shield	AP	621	LHLDW1046CEZZ J		Wire Holder	AA
604	LH LDZ 17666 EZZ J		Operation PWB Holder	AK	622	LANGT9151GEFW J		Power Holder(B)	AD
605	LHLDP1 117GEZZ J		LED Holder	AC	623	LANGT9150GEFW J		Power Holder (A)	AD
606	LANGT9149GEFW J		Angle (C)	AD	624	QEARP0345GEFW J		Earth	AB
607	LANGT9148GEFW J		Angle (B)	AD	625	LHLDZ1 762GEZZ J		Rail (Left)	AC
608	LANGT9147GEFW J		Angle (A)	AC	626	PSLDM4364GEFW J		Shield	AH
609	HPNLC1 667GES A J		Operation Panel	AY	627	PSLDM4380GEZZ J		Main PWB Shield	AK
610	QEARP0347GEZZ J		Earth Plate	AD	628	XEBSD30P12000 J		Screw, M3×12	AA
611	JBTN-2489GESB J		Button, Operation (C)	A G	629	XEBSD40P12000 J		Screw, M4×12	AA
612	JBTN-2488GES A J		Button, Operation (B)	A F	630	XHPSD30P06WS0 J		Screw, M3×6	AA
613	JBTN-2487GES A J		Button, Operation (A)	A F	631	XBPSD26P04WS0 J		Screw, M2.6 x4	AA
614	QEARP0346GEFW J		Earth Plate	AC	632	XHPS330P06WS0 J		Screw, M3×6	AA
615	PSPAH0066GEZZ J		Spacer (C)	AC	634	LX-HZ0005TAFD J		Screw, M2.6×8	AA
616	PSPAH0063GEZZ J		Spacer (A)	AC	635	PSPAH0069GEZZ J		Sacer	AB
617	PSPAH0064GEZZ J		Spacer (B)	AA	636	LHLDW1076GEZZ J		Holder	AA
					637	TLABM2162GEZZ J		No. Card	AA

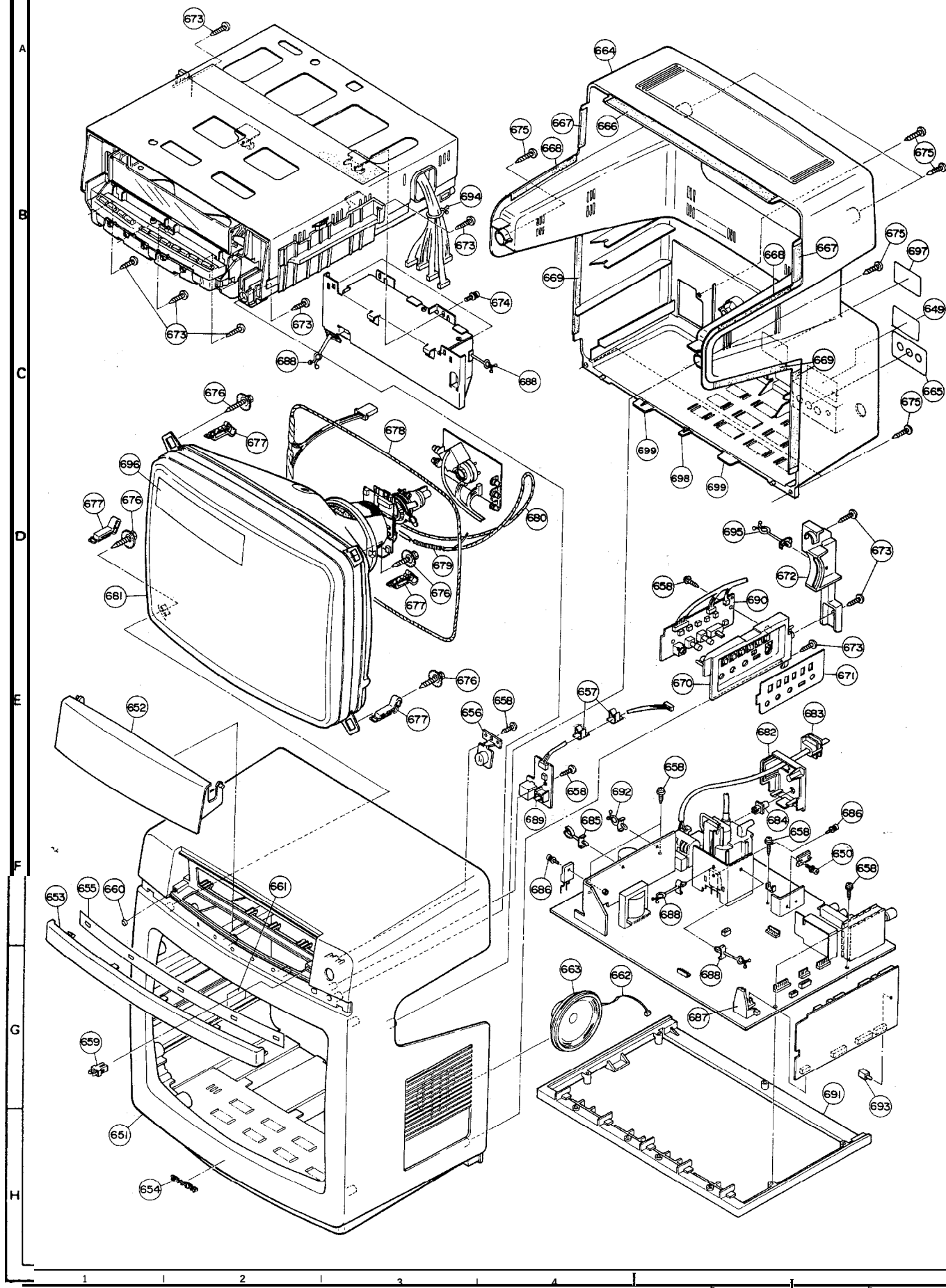
MECHANISM CHASSIS PARTS



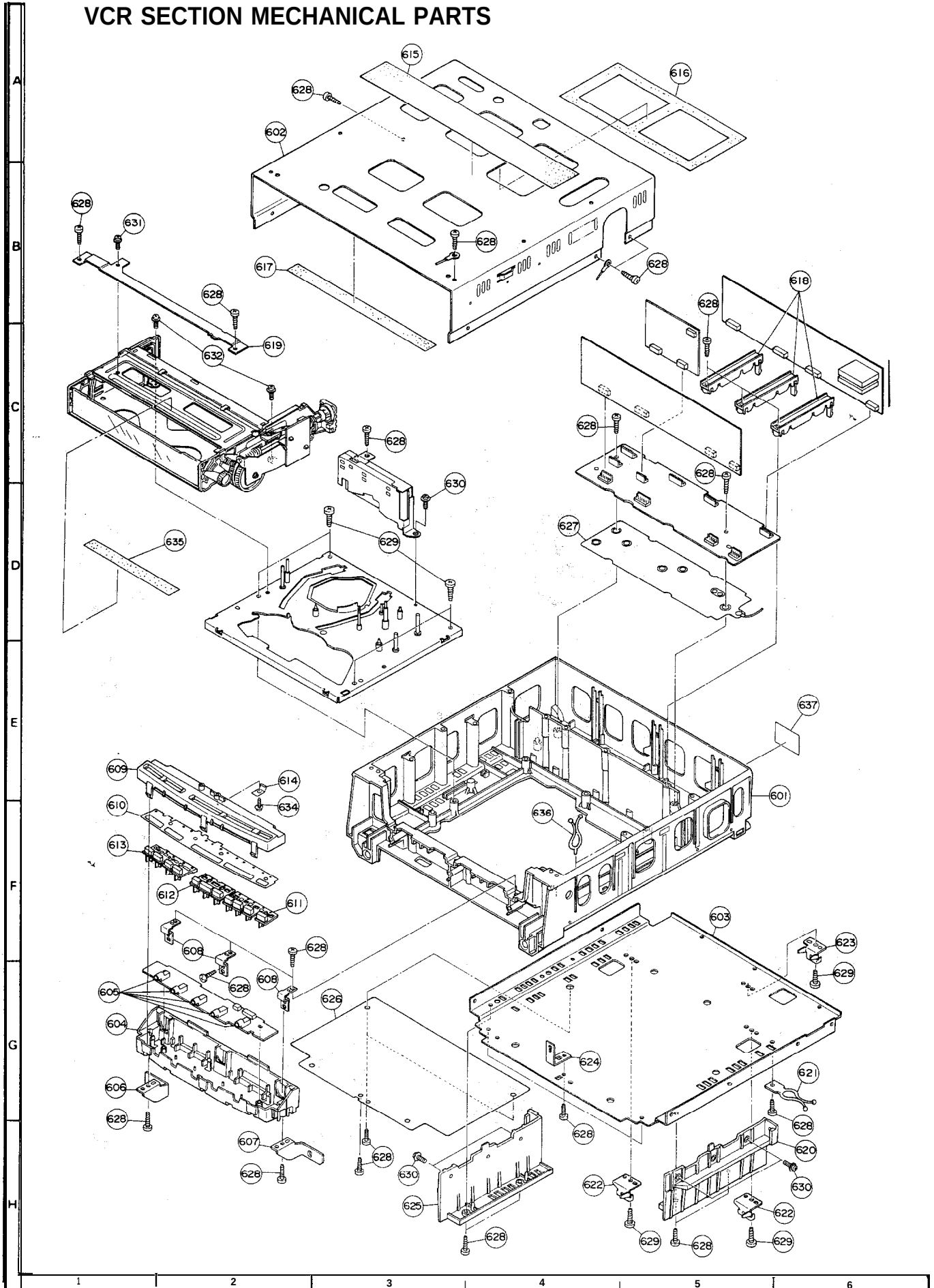
CASSETTE HOUSING CONTROL PARTS



TV SECTION MECHANICAL PARTS



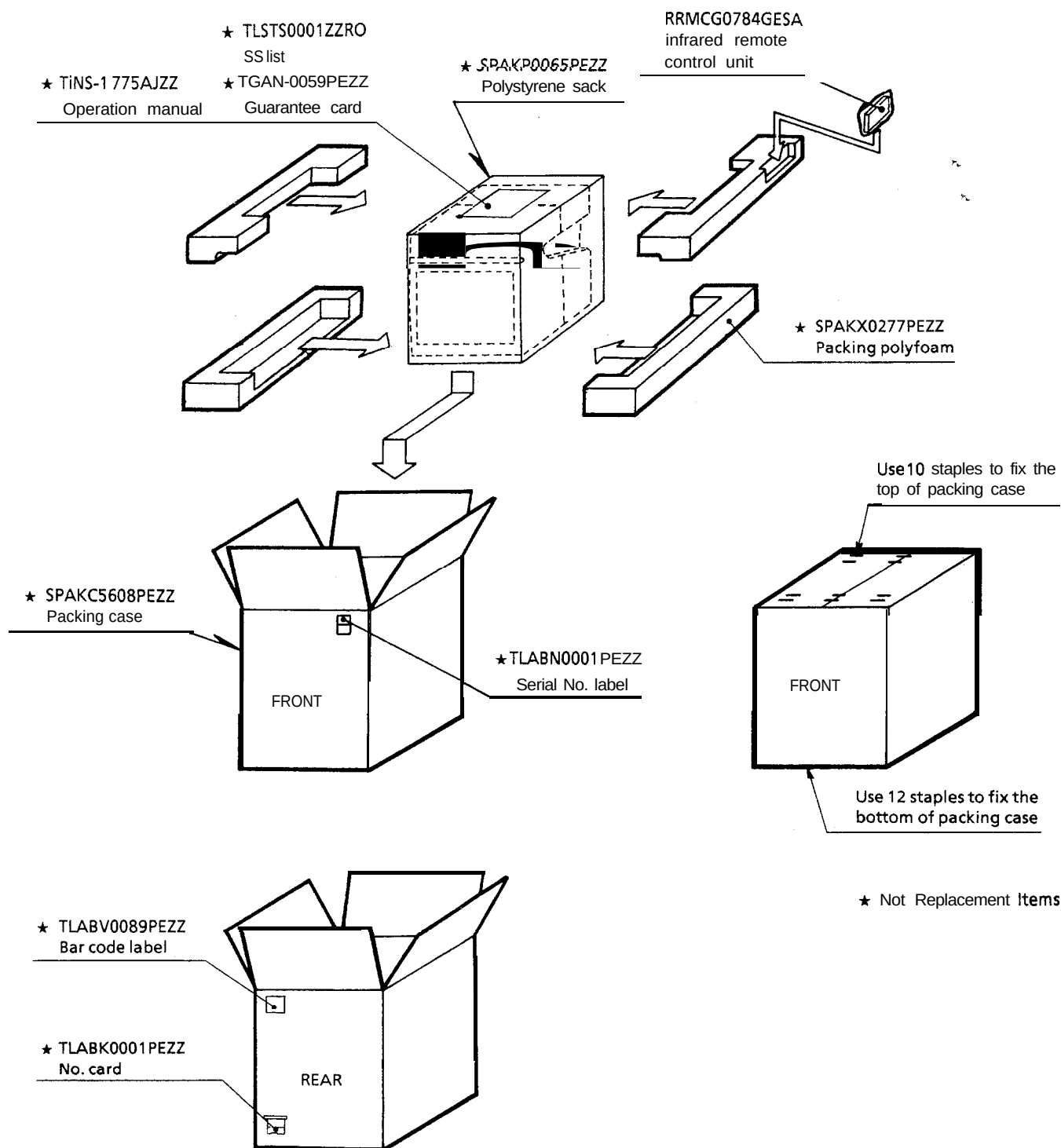
VCR SECTION MECHANICAL PARTS



PACKING OF THE SET

■ Setting positions of the knobs

Channel selected	Channel 1	Contrast control	MAX.
Channels skipped	All channels except 39 and AV channels 1 thru 5 to skip	Brightness control	Center
		Colour mode control	Center
Blue back switch	ON	Power switch	OFF
Tint control	Center	Volume control	MIN.
Picture control	Center	C-lock	OFF (LED off)



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